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**WO 2005/085861 A2**

(54) Title: NUCLEIC ACIDS AND ENCODED POLYPEPTIDES FOR USE IN LIVER DISORDERS AND EPITHELIAL CANCER

(57) Abstract: The invention relates to nucleic acids and to corresponding encoded polypeptides and to their use for the diagnosis, prevention and/or treatment of liver disorders and neoplastic disorders, especially cancer of the liver and other epithelial tissues, benign liver neoplasms such as adenoma and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention further relates to methods of diagnosing and treating these disorders.

## Description

### NUCLEIC ACIDS AND ENCODED POLYPEPTIDES FOR USE IN LIVER DISORDERS AND EPITHELIAL CANCER.

#### Technical Field

- [001] The invention relates to nucleotides and to corresponding encoded proteins and to their use for the diagnosis, prevention and/or treatment of liver disorders and neoplastic disorders, especially cancer of the liver and other epithelial tissues, benign liver neoplasms such as adenoma and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention further relates to methods of diagnosing and treating these disorders.
- [002] The development of cancer in general is characterized by genetic mutations that alter activity of important cellular pathways including, for example, proliferation, apoptosis (cell death), response to stress and epithelial/stroma interactions. It is increasingly recognized that identification of nucleic acids that are deregulated in cancer can provide important new insight into the mechanisms of neoplastic transformation. Identification of deregulated nucleic acid expression in precancerous stages, such as macro regenerative nodules and the "large" and "small" cell change in liver cancer, provide understanding of early events in malignant transformation. Similarly, identification of deregulated gene expression in disorders characterized by tissue proliferation and remodeling, such as FNH and cirrhosis in the liver may distinguish nucleic acids involved in proliferation and malignant transformation. Together such deregulated nucleic acids and the encoded gene products have potential as new diagnostic markers for cancer. Moreover, the products of these deregulated nucleic acids *per se* are targets for therapeutic intervention in the prevention and/or treatment of these disorders in human patients.
- [003] The liver plays a vital role in the metabolism of proteins, lipids, carbohydrates, nucleic acids and vitamins. There are numerous disorders effecting the liver that cannot be diagnosed, prevented or treated effectively, such as hepatocellular carcinoma (HCC). Examination of HCC is particularly well suited for the identification of deregulated gene expression in cancer. This is because tissue samples of HCC can be obtained from surgically resected tumors and the tumors are well circumscribed solid structures with little stromal tissue. Furthermore, as indicated above, there is the possibility for comparative analyses of benign and malignant tumors as well as cirrhosis, a non-neoplastic condition. If the limitations in the art of identifying differentially expressed genes associated with liver disorders could be overcome, this comparative approach may enable identification of deregulated nucleic acids

specifically involved in the processes of cellular proliferation and tissue remodeling in a mature organ (e.g., in cirrhosis) as well as the identification and discrimination of gene expression alterations associated with hyperplasia (such as FNH) and with benign and malignant neoplasms (e.g., adenoma and HCC). In HCC there is an urgent need for new and better diagnostic and therapeutic capabilities. Deregulated genes in liver cancer may also be highly relevant to other cancers of the gastrointestinal tract and indeed with other carcinomas (epithelial derived cancers) as these tissues share a common embryological origin.

- [004] On a global basis, hepatocellular carcinoma (HCC) belongs to the most common malignant tumors accounting for about 1 million deaths/year (Ishak et al., 1999, *Atlas of Tumor Pathology. Fascicle 31*. Armed Forces Institute of Pathology, Washington, DC).
- [005] Definitive diagnosis of neoplastic liver disorders such as HCC and many other tumors relies upon histopathological evaluation of biopsy specimens. This invasive surgical procedure is generally not undertaken until symptoms appear and the disease is then most often in advanced stages, thereby limiting therapeutic intervention options. Thus there is a need to improve diagnostics and methods of diagnosis. In addition, early diagnosis is crucial but hampered by late onset or even a lack of specific clinical symptoms. At diagnosis most HCC tumors are no longer amenable to surgical resection (except encapsulated tumors or the fibrolamellar variants) (Chen and Jeng, 1997, *J. Gastroenterol. Hepatol.*, 12:329-34); moreover, they are highly resistant to cytostatic therapy (Kawata et al., 2001, *Br. J. Cancer*, 84:886-91). Overall, death usually occurs within 1 year after diagnosis. Thus, markers for early detection, prognostic indicators, and effective prevention and/or treatment regimens for HCC are highly desirable in this field.
- [006] In contrast, unlike the well-studied situation in colorectal cancer, liver adenoma may not represent a precursor lesion of HCC. Similarly, although cirrhosis and hepatitis viral infections are clearly risk factors for HCC, these conditions are not prerequisite for the development of HCC. Certain liver lesions may represent HCC pre-stages such as macro regenerative nodular hyperplasia, but this is not yet confirmed (Shortell and Schwartz, 1991, *Surg Gynecol Obstet.*, 173:426-31; Anthony, P. in MacSween et al, eds. *Pathology of the Liver*. 2001, Churchill Livingstone, Edinburgh). Although these disorders are diagnosed by histopathological investigation of liver resections and liver biopsies, no efficient method exists for earlier or non-invasive detection of these conditions. Again, there is immediate need for diagnostic and prognostic markers for these neoplasms and for non-invasive detection of these disorders.
- [007] Within the past decade, several technologies have made it possible to monitor the

expression level of a large number of transcripts within a cell at any one time (see, e.g., Schena et al., 1995, *Science*, 270:467-470; Blanchard et al., 1996, *Nature Biotechnology*, 1996, 14:1649). Transcript array technology has been utilized for the identification of genes that are up regulated or down regulated in various disordered states. Several recent studies have utilized this technology to examine changes in gene expression in HCC. These studies have variously revealed deregulation (i.e., over- and underexpression) of genes encoding liver specific proteins in HCC cell lines and HCC tissues relative to controls. Moreover the studies revealed genes essential for cell cycle control, stress response, apoptosis, lipid metabolism, cell-cell-interaction, DNA repair and cytokine and growth factor production (e.g., Graveel et al, 2001, *Oncogene*, 20:2704-12; Tackels-Horne et al, 2001, *Cancer*, 92: 395-405; Xu et al, 2001, *Cancer Res.*, 61:3176-81). However, there is little concordance in the gene expression patterns reported in these studies that may be due to differences in experimental design and/or to the heterogeneity of HCC tissue *per se*. Moreover, the etiologies of these HCCs are an important factor. Chronic hepatitis B and C virus infections are the major causes of HCC but damage from alcohol and chronic liver metabolic disorders are also recognized to result in HCC and the mechanisms responsible for development of a tumor from these different etiologies are likely to differ. Taken together, until now no satisfactory diagnostics and methods of diagnosing have been developed in order to be able to intervene in liver disorders.

[008] The same applies to the therapy of liver disorders, and epithelial cancers. For HCC for instance, there is no effective therapeutic option except resection and transplantation but these approaches are only applicable in early stages of HCC, limited by the access to donor livers, and associated with severe risks for the patient. In addition, these approaches are extremely expensive. These cancers respond very poorly to chemotherapeutics, most likely due the normal liver function in detoxification and export of harmful compounds. Several other therapeutic options, such as chemoembolization, cryotherapy and ethanol injection are still in an experimental phase and the efficacy of these is not established. Surgical intervention remains the best treatment option but it is not possible to define with precision the extent of the tumor. This invasive procedure therefore, is suboptimal from the perspective of treatment. Furthermore, the lack of early diagnostics for specific liver dysfunctions leads most often to advanced progression of the disease that further confounds therapeutic options and dramatically increases patient mortality from these diseases (Jansen P.L., 1999, *Neth. J. Med.*, 55:287-292). Thus until now no satisfactory therapies have been developed in order to be able to intervene in liver disorders, and other epithelial cancers. Furthermore, in the state of the art, recognition of the different subtypes of liver disorders such as HCC precursor lesions, benign liver neoplasms, and metabolic

liver diseases such as alcoholic liver disease and cirrhosis, as revealed by differential gene expression, have not been disclosed. A summary of the key disease features of some of the disorders evaluated in the invention is provided in Table 1.

[009] **Table 1: Diseases features**

**Table 1**

DISORDER	Cellular proliferation	Tissue remodeling	Clonal cell expansion	Neoplasia	Transformation n/ Malignant potential
Cirrhosis	+	+			
FNH	+	+	+/-		
Adenoma	+	+	+	+	
HCC	+	+	+	+	+

### Summary of the Invention

[010] The invention relates to nucleotides and to corresponding encoded proteins and their use for the diagnosis, prevention and/or treatment of liver disorders, especially of hepatocellular carcinoma (HCC), and epithelial cancers, pre-cancerous liver lesions, benign neoplasms such as adenoma, and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention also relates to vectors and cells comprising such nucleic acids, and to antibodies or antibody fragments directed against said polypeptides and nucleic acids.

[011] The invention further relates to methods of diagnosing and treating these disorders. The evaluation of multiple disorders with overlapping but distinct morphological and clinical features provides new information for identification and discrimination and ultimately new therapeutic strategies for these disorders according to invention.

### Disclosure of Invention

[012] A unique approach employed in this invention utilizes discrete, pathologist-confirmed liver cancer pathologies for production of disease specific cDNA libraries enriched in genes specifically up- and down-regulated in HCC compared with a pool of non-neoplastic human livers. The library is a genome-wide representation of deregulated gene expression in HCC and therefore includes all potential HCC deregulated genes. Repetitive hybridization to these library clones with labeled expressed nucleic acids from many additional discrete, pathologist-confirmed liver cancer samples (HCCs) and non-malignant liver lesions indicated nucleic acids highly deregulated in HCC. The surprising finding is that this approach provides deregulated

nucleic acids that had not previously been identified as well as many deregulated nucleic acids that were not before associated with HCC, the elevated expression of which can also be associated with other neoplasms. These HCC deregulated genes and proteins are the subject of this invention.

- [013] The screening and verification strategy is already inventive *per se* owing to the elaborate and defined choice of parameters. Identification of differentially expressed genes according to the invention relies upon histopathologically distinguished liver disease tissue for comparison of gene expression changes in disorders of the human liver. Non-diseased reference liver samples for the experiments are also diagnostically confirmed.
- [014] The object of the invention is a method of diagnosis of a liver disorder, liver cancer and/or epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence SEQ ID 1 to SEQ ID 93 (Table 2A to 2D), a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, or variants thereof, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.
- [015] Another object of the invention is a method of treating a patient suffering from a liver disorder or an epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides or a functional variant thereof, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of one of the aforementioned antibodies directed against one of the aforementioned polypeptides or against a functional variant thereof, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, is administered to the patient in need of a the treatment in a therapeutically effective amount.
- [016] Another aspect of the invention is a pharmaceutical composition comprising at least one compound selected from the group consisting of a polypeptide according to the

invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides or a functional variant thereof, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody directed against one of the aforementioned polypeptides, an antibody directed against a functional variant of one of the aforementioned polypeptides, a fragment of one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments and, optionally, suitable additives or auxiliaries.

[017] The accession numbers of the polypeptides according to the invention and their cDNAs are shown in Table 2A to 2D.

[018]

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[047] **Table 2A to 2D: Polypeptides and cDNAs with their respective SEQ ID numbers and accession numbers from the GenBank database.**

[048]

**Table 2A**

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
PI4K2	1	NP_060895	94	NM_018425
ZNF216	2	NP_005998	95	NM_006007
AKR1C1	3	NP_001344	96	NM_001353
dUT	4	NP_001939	97	NM_001948
PACE4	5	NP_002561	98	NM_002570
BIGH3	6	NP_000349	99	NM_000358
PRKAR1A	7	NP_002725	100	NM_002734
s.t. Ocia	8	NP_060300	101	NM_017830
SDCCAG28	9	NP_006636	102	NM_006645
PRDX1	10	NP_002565	103	NM_002574
TMP21	11	NP_006818	104	NM_006827
IQGAP2	12	NP_006624	105	NM_006633
Rab2	13	NP_002856	106	NM_002865
ARF1	14	NP_001649	107	NM_001658
HSPC1	15	NP_005339	108	NM_005348
TLR5	16	NP_003259	109	NM_003268
GAP-SH3	17	NP_005745	110	NM_005754
Crisp-3	18	NP_006052	111	NM_006061
TM4SF4	19	NP_004608	112	NM_004617

AQP9	20	NP_066190	113	NM_020980
LOC51716	21	NP_057364	114	NM_016280
Cystatin	22	NP_000091	115	NM_000100
Ki	23	NP_005780	116	NM_005789

[049]

[050]

[051]

**Table 2B**

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
Porimin	24	NP_443164	117	NM_052932
PTPRZ1	25	NP_002842	118	NM_002851
Rab9 effector p40	26	NP_005824	119	NM_005833
RBap48	27	NP_005601	120	NM_005610
PABPC1	28	NP_002559	121	NM_002568
NF1/B2	29	NP_005587	122	NM_005596
RPL7	30	NP_000962	123	NM_000971
HNRPDL	31	NP_005454	124	NM_005463
OBCL6	32	novel	125	novel
SNRPG	33	NP_003087	126	NM_003096
KREV-1	34	NP_002875	127	NM_002884
DRB5	35	NP_003833	128	NM_003842
PKCI-1	36	NP_005331	129	NM_005340
IMPACT	37	NP_060909	130	NM_018439
BMI	38	NP_005171	131	NM_005180
G3BP	39	NP_005745	132	NM_005754
RHEB2	40	NP_005605	133	NM_005614
MARCKS	41	NP_002347	134	NM_002356
ALURBP	42	NP_003124	135	NM_003133
PPGB	43	NP_000299	136	NM_000308
GRB2	44	NP_002077	137	NM_002086

TRAP1	45	NP_057376	138	NM_016292
PDHB	46	NP_000916	139	NM_000925
DAD-1	47	NP_001335	140	NM_001344
PSME2	48	NP_002809	141	NM_002818
QP-C	49	NP_006285	142	NM_006294
MTRPS33	50	NP_444263	143	NM_053035

[052]

Table 2C

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
ARF4	51	NP_001651	144	NM_001660
DDB1	52	NP_001914	145	NM_001923
GNG10	53	NP_004116	146	NM_004125
DP1	54	NP_002810	147	NM_002819
ATP1B1	55	NP_001668	148	NM_001677
SLC25A3	56	NP_002626	149	NM_002635
SNC6	57	NP_003923	150	NM_003932
OMG	58	NP_002535	151	NM_002544
PB1S	59	NP_002784	152	NM_002793
RPS21	60	NP_001015	153	NM_001024
MMP-2	61	NP_004521	154	NM_004530
YWHAZ	62	NP_663723	155	NM_145690
PPP3R1	63	NP_671709	156	NM_147180
CTNNA1	64	NP_001894	157	NM_001903
ADCYAP1	65	NP_001108	158	NM_001117
syntenin	66	NP_005616	159	NM_005625
topoisomerase IIb	67	NP_001059	160	NM_001068
UMP-CMPK	68	NP_057392	161	NM_016308
PSMD4	69	NP_722544	162	NM_153822
hu_BTF3	70	NP_001198	163	NM_001207
rhoA	71	NP_001655	164	NM_001664

LDH-B	72	NP_002291	165	NM_002300
TBXA2-R	73	NP_001051	166	NM_001060
hu_CAP	74	NP_006357	167	NM_006366
hu_PP2a-cat	75	NP_002706	168	NM_002715
SDHC	76	NP_002992	169	NM_003001

[053]

Table 2D

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
hu_GDP-di2	77	NP_001166	170	NM_001175
CCNI	78	NP_006826	171	NM_006835
Mac25	79	NP_001544	172	NM_001553
TBP	80	NP_003185	173	NM_003194
FDX1	81	NP_004100	174	NM_004109
NLVCF	82	NP_003767	175	NM_003776
GNG3	83	NP_036334	176	NM_012202
RCN2	84	NP_002893	177	NM_002902
hu_adk2	85	NP_001616	178	NM_001625
hu_Dcsa19	86	NP_009035	179	NM_007104
c/EBP	87	NP_001797	180	NM_001806
Rab GG	88	NP_004573	181	NM_004582
**c-syn-1	89	NP_002028	182	NM_002037
**c-syn-2	90	NP_694592	183	NM_153047
**c-syn-3	91	NP_694593	184	NM_153048
PPP1R15A	92	NP_055145	185	NM_01433
SCL5A6	93	NP_066918	186	NM_021095

[054] [(\*\*)c-syn represents three alternative nucleotide transcripts with corresponding three protein products]

[055]

[056] A subset of these nucleic acids according to the invention have been shown by RT-PCR analysis to be specifically expressed or deregulated in other cancers of epithelial origin and preferably not in corresponding normal human tissue(s). These nucleic acids

include SEQ ID Nos. 94 to 186 (provided in Table 2A to 2D). Deregulated nucleic acids in liver cancer may preferably be highly relevant to other cancers of the gastrointestinal tract as these tissues share a common embryological origin. Consequently, these nucleic acids and the encoded polypeptides may preferably be similarly utilized for diagnostics methods, pharmaceutical compositions and methods of prevention and/or treatment of these epithelial cancers.

- [057] The polypeptides and nucleic acids according to the invention have in common that they are differentially expressed in a sample isolated from a patient suffering from a disorder according to the invention compared to a reference sample. The regulation of the polypeptides and nucleic acids according to the invention is essential for the pathologic process and which are thus in a direct or indirect relationship with diagnosis, prevention and/or treatment of disorders according to the invention. The polypeptides and the nucleic acids according to the invention do not belong to the targets known until now such that surprising and completely novel approaches for diagnosis and therapy result from this invention.
- [058] Generally, the analysis of differentially expressed genes in tissues is less likely to result in errors in the form of artifactual false-positive clones than the analysis of cell culture systems. In addition to the fact that existing cell culture systems cannot adequately simulate the complexity of pathological processes in the tissue, the variations in cell behavior in the culture environment lead to nucleic acid and polypeptide expression patterns with questionable relation to the actual pathologic state. These problems may be less pronounced by an approach that utilizes gene expression in normal and diseased human tissue but again multiple variables confound clear identification of differential gene expression that is directly relevant to disease. For example, differentially expressed nucleic acids may result from inter-individual differences, metabolic state and/or clinical treatment paradigm. Further, large scale gene expression studies using cDNA microarrays do not indicate the cellular source of variation in gene expression. In addition, a differential gene expression study including all or most genes produces a very large volume of data that confounds identification of key disease-associated gene expression changes. Consequently, an approach that includes large scale profiling of gene expression from tissue from liver disorders that are defined only generally (as for example, "liver tumors") is unlikely to illuminate key genes involved in the disease process and it is these key genes that represent best targets for diagnostics and therapeutic intervention.
- [059] On account of these difficulties, the success of the screening is significantly dependent on the choice of the experimental parameters. While the methods used are based on established procedures, the screening and verification strategy is already inventive *per se* owing to the elaborate and defined choice of parameters. A unique

approach employed in this invention utilizes discrete, pathologist-confirmed liver cancer pathologies for production of disease specific cDNA libraries enriched in nucleic acids specifically up- and down-regulated in HCC compared with a pool of non-neoplastic human livers. Non-diseased reference liver samples for the experiments are also diagnostically confirmed and pooled from 3 independent samples to reduce detection of false positives resulting from inter-individual variations. Nucleic acids commonly expressed at similar levels in the reference liver pool and in diseased liver (i.e., HCC) are removed by the generation of subtractive suppressive hybridization (SSH) cDNA libraries (Diatchenko et al., 1996, Proc. Natl. Acad. Sci. USA, 93:6025-6030). These cDNAs are highly enriched for nucleic acids both up- and down-regulated in HCC but do not represent those that are not differentially expressed. Each of several thousand SSH clones were amplified by the polymerase chain reaction (PCR) and affixed to glass slides in custom cDNA microarrays. RNA from additional pathologist-confirmed liver disorders is converted to fluorescently-labeled cDNA for competitive hybridization with the pooled non-diseased liver RNA on the microarrays. The resulting ratio of hybridization intensity reveals nucleic acids specifically deregulated in liver disorders. In addition to providing a pool of candidate cDNAs highly enriched for differentially expressed genes, the SSH library represents on a genome-wide scale most if not all differentially expressed genes with far fewer clones than in standard cDNA libraries. This feature thereby focuses on nucleic acids specifically deregulated in disease. The SSH libraries generated in this invention include cDNA clones from nucleic acids that are essentially not expressed in normal liver and thereby not represented in conventional cDNA libraries or on genome-scale cDNA microarrays.

- [060] Overexpression of the sequences according to the invention in liver disorder tissue compared to normal liver is confirmed by independent analysis of RNA levels with sequence-specific quantitative RT-PCR (Q-PCR). In these verification experiments, PCR product corresponding to the cellular RNA levels of the sequences according to the invention are monitored by fluorescent detection of the specific PCR product. The fluorescent signal is provided either by a sequence specific hydrolysis probe oligonucleotide (primer) in the TaqMan/Assay-on-Demand procedure (Figure 100 to 103) or by a fluorescent double stranded DNA binding dye such as SYBR green (Figure 104). Levels of PCR products corresponding to the sequences according to the invention are normalized for experimental variability by comparison with the levels of 'housekeeping' genes including  $\beta$ -actin, which are considered relatively invariant in disease or following experimental manipulations. The reference gene primers used for TaqMan Q-PCR analyses are GAPDH-p1, (SEQ ID 187); GAPDH-p2, (SEQ ID 188); GAPDH-p3, (SEQ ID 189);  $\beta$ Actin-p1, (SEQ ID 190);  $\beta$ Actin-p2, (SEQ ID 191); and

$\beta$ Actin-p3, (SEQ ID 192). The reference gene primers used for SYBR Green analyses are  $\beta$ Actin-p4, (SEQ ID 193); and  $\beta$ Actin-p5, (SEQ ID 194). The determination of RNA levels relative to these housekeeping genes in Q-PCR experiments is performed according to the method of Pfaffl (Nucleic Acids Research, 2001, 29(9):e45). These techniques are well known to a person skilled in the art.

- [061] Furthermore, expression of HCC deregulated genes according to this invention correlates with proliferation of hepatoma cells (Hep3B, HepG2) following for example 8 hours and 12 hours serum stimulation of quiescent cells. This finding supports the suggestion that overexpression of the sequences according to the invention is functionally significant for proliferative liver disorders such as liver cancer.
- [062] Compared to the state of the art, these polypeptides and nucleic acids surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers. The nucleic acids and polypeptides according to the invention can be utilized for the diagnosis, prevention and treatment of liver disorders, and epithelial cancers.
- [063] The present invention relates to at least one polypeptide comprising a sequence according to one of the SEQ ID 1 to SEQ ID 93, or a functional variant thereof. The invention also relates to a nucleic acid coding for the polypeptide or a functional variant thereof.
- [064] In preferred embodiment the polypeptide consists of the sequence according to the SEQ ID 1. In another preferred embodiment the nucleic acid consists of the sequence according to the SEQ ID 94.
- [065] Compared to the state of the art, these polypeptides and nucleic acids surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.
- [066] In another aspect of the invention the invention relates to the use of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant of the polypeptide, a nucleic acid encoding one of the aforementioned polypeptides, a nucleic acid encoding the functional variant, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody directed against one of the aforementioned polypeptides, an antibody directed against a functional variant of one of the aforementioned polypeptides, a fragment of one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a

cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and/or at least one cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, for the diagnosis, prevention and/or treatment of disorders according to the invention. Further embodiments of the invention are described in detail below.

- [067] When compared to the state of the art of therapy of liver disorders, and/or epithelial cancers the use of these components surprisingly provide an improved, sustained and/or more effective diagnosis, prevention and/or treatment of disorders according to the invention.
- [068] The term "polypeptide" refers to the full length of the polypeptide according to the invention. In a preferred embodiment the term "polypeptide" also includes isolated polypeptides and polypeptides that are prepared by recombinant methods, e.g. by isolation and purification from a sample, by screening a library and by protein synthesis by conventional methods, all of these methods being generally known to the person skilled in the art. Preferably, the entire polypeptide or parts thereof can be synthesized, for example, with the aid of the conventional synthesis such as the Merrifield technique. In another preferred embodiment, parts of the polypeptides according to the invention can be utilized to obtain antisera or specific monoclonal antibodies, which may be used to screen suitable gene libraries prepared to express the encoded protein sequences in order to identify further functional variants of the polypeptides according to the invention.
- [069] The term "polypeptide according to the invention" refers to the polypeptides according to the SEQ ID 1 to SEQ ID 93 (Table 2A to 2D).
- [070] The term "functional variants" of a polypeptide within the meaning of the present invention refers to polypeptides which have a sequence homology, in particular a sequence identity, of about 70%, preferably about 80%, in particular about 90%, especially about 95%, most preferred of 98 % with the polypeptide having the amino acid sequence according to one of the SEQ ID 1 to SEQ ID 93. Such functional variants are, for example, the polypeptides homologous to a polypeptide according to the invention, which originate from organisms other than human, preferably from non-human mammals such as, for example mouse, rats, monkeys and pigs. Other examples of functional variants are polypeptides that are encoded by different alleles of the gene, in different individuals, in different organs of an organism or in different developmental phases.
- [071] Functional variants, for example, also include polypeptides that are encoded by a nucleic acid which is isolated from non-liver-tissue, e.g. embryonic tissue, but after expression in a cell involved in liver disorders have the designated functions. Functional variants preferably also include naturally occurring or synthetic mutations,

particularly mutations that quantitatively alter the activity of the peptides encoded by these sequences. Further, such variants may preferably arise from differential splicing of the encoding gene.

- [072] "Functional variants" refer to polypeptides that have essentially the same biological function(s) as the corresponding polypeptide according to the invention. Such biological function can be assayed in a functional assay.
- [073] In order to test whether a candidate polypeptide is a functional variant of a polypeptide according the invention, the candidate polypeptide can be analyzed in a functional assay generally known to the person skilled in the art, which assay is suitable to assay the biological function of the corresponding polypeptide according to the invention. Such functional assay comprise for example cell culture systems; enzymatic assays, the generation of mice in which the genes are deleted ("knocked out") or mice that are transgenic for gene encoding the candidate polypeptide, etc. If the candidate polypeptide demonstrates or directly interferes with essentially the same biological function as the corresponding polypeptide according to the invention, the candidate polypeptide is a functional variant of the corresponding polypeptide, provided that the candidate polypeptide fulfills the requirements on the level of % sequence identity mentioned above.
- [074] Furthermore, the term "functional variant" encompasses polypeptides that are preferably differentially expressed in patients suffering from liver disorders, or other epithelial cancers relative to a reference sample or a reference library, including polypeptides expressed from mutated genes or from genes differentially spliced, provided that the candidate functional variant polypeptide fulfills the criteria of a functional variant on the level of % sequence identity. Such expression analysis can be carried out by methods generally known to the person skilled in the art.
- [075] "Functional variants" of the polypeptide can also be parts of the polypeptide according to the invention with a length of at least from about 7 to about 1000 amino acids, preferably of at least 10 amino acids, more preferably at least 20, most preferred at least 50, for example at least 100, for example at least 200, for example at least 300, for example at least 400, for example at least 500, for example at least 600 amino acids provided that they have essentially the same biological function(s) as the corresponding polypeptide according to the invention. Functional variants, such as in fusion proteins, may contain either on one or both ends additional aminoacid stretch(es), preferably 1 to 50 amino acids, more preferably 20 amino acids. Also included are deletions of the polypeptides according to the invention, in the range from about 1-30, preferably from about 1-15, in particular from about 1-5 amino acids provided that they have essentially the same biological function(s) as the corresponding polypeptide according to the invention. For example, the first amino acid

methionine can be absent without the function of the polypeptide being significantly altered. Also, post-translational modifications, for example lipid anchors or phosphoryl groups may be present or absent in variants.

- [076] "Sequence identity" refers to the degree of identity (% identity) of two sequences, that in the case of polypeptides can be determined by means of for example BLASTP 2.0.1 and in the case of nucleic acids by means of for example BLASTN 2.014, wherein the Filter is set off and BLOSUM is 62 (Altschul et al., 1997, Nucleic Acids Res., 25:3389-3402).
- [077] "Sequence homology" refers to the similarity (% positives) of two polypeptide sequences determined by means of for example BLASTP 2.0.1 wherein the Filter is set off and BLOSUM is 62 (Altschul et al., 1997, Nucleic Acids Res., 25:3389-3402).
- [078] The term "liver disorder" refers to and comprises all kinds of disorders that preferably affect the anatomy, physiology, metabolic, and/or genetic activities of the liver, that preferably affect the generation of new liver cells, and/or the regeneration of the liver, as a whole or parts thereof preferably transiently, temporarily, chronically or permanently in a pathological way. Preferably also included are inherited liver disorders and neoplastic liver disorders. Liver disorder is further understood to preferably comprise liver disorders caused by trauma, intoxication, in particular by alcohol, drugs or food intoxication, radiation, infection, cholestasis, immune reactions, and by inherited metabolic liver diseases. Preferred examples of liver disorders include cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, and haemochromatosis. Preferably further included are autoimmune-disorders wherein the autoimmune response is directed against at least one polypeptide according to the invention. Within the meaning of the present invention the term "liver disorder" preferably also encompasses liver cancer, for example hepatocellular carcinoma (HCC), benign liver neoplasms such as adenoma and/or FNH. Preferably HCC further comprises subtypes of the mentioned disorders, preferably including liver cancers characterized by intracellular proteinaceous inclusion bodies, HCCs characterized by hepatocyte steatosis, and fibrolamellar HCC. For example, precancerous lesions are preferably also included such as those characterized by increased hepatocyte cell size (the "large cell" change), and those characterized by decreased hepatocyte cell size (the "small cell" change) as well as macro regenerative (hyperplastic) nodules (Anthony, P. in MacSween et al, eds. Pathology of the Liver, 2001, Churchill Livingstone, Edinburgh).
- [079] The term "epithelial cancer" within the meaning of the invention includes adeno-carcinomas of any organ other than the liver, preferably of the lung, stomach, kidney, colon, prostate, skin and breast, and refers to disorders of these organs in which epithelial cell components of the tissue are transformed resulting in a malignant tumor

identified according to the standard diagnostic procedures as generally known to a person skilled in the art.

- [080] Within the meaning of the invention the term "disorder according to the invention" encompasses epithelial cancer and liver disorders as defined above.
- [081] In the case of polypeptides, the term "differential expression of a polypeptide" refers to the relative level of expression of the polypeptide in an isolated sample from a patient compared to the expression of the polypeptide in a reference sample or a reference library. The expression can be determined by methods generally known to the person skilled in the art. Examples of such methods include immunohistochemical or immunoblot or ELISA detection of the polypeptide with antibodies specific for the polypeptide. Detection of the polypeptide through genetic manipulation to label the polypeptide and detection in a model system is preferably also included such as by tagging the polypeptide in a transgene for expression in a model system.
- [082] The term "sample" refers to a biomaterial comprising liver tissue or liver cells, also tissue from another organ subject to malignant transformation or a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusions, cerebral spinal fluid, saliva, urine, semen or feces.
- [083] The sample can be isolated from a patient or another subject by means of methods including invasive or non-invasive methods. Invasive methods are generally known to the skilled artisan and comprise for example isolation of the sample by means of puncturing, surgical removal of the sample from the opened body or by means of endoscopic instruments. Minimally invasive and non-invasive methods are also known to the person skilled in the art and include for example, collecting body fluids such as blood, serum, plasma, ascitic, pleural and cerebral spinal fluid, saliva, urine, semen, and feces. Preferably the non-invasive methods do not require penetrating or opening the body of a patient or subject through openings other than the body openings naturally present such as the mouth, ear, nose, rectum, urethra, and open wounds.
- [084] The term "minimally invasive" procedure refers to methods generally known, especially by persons skilled in the art, for obtaining patient sample material that do preferably not require anesthesia, can be routinely accomplished in a physician office or clinic and are either not painful or only nominally painful. The most common example of a minimally invasive procedure is venupuncture.
- [085] The term "reference sample" refers to a sample that serves as an appropriate control to evaluate the differential expression of a nucleic acid and/or a polypeptide according to the invention in a given sample isolated from a patient; the choice of such appropriate reference sample is generally known to the person skilled in the art. Examples of reference samples include samples isolated from a non-diseased organ or tissue or cell(s) of the same patient or from another subject, wherein the non-diseased

organ or tissue or cell(s) is selected from the group consisting of liver tissue or liver cells, blood, or the samples described above. For comparison to expression in the sample isolated from a patient with the liver disorder, the reference sample may also include a sample isolated from a non-diseased organ or tissue or cell(s) of a different patient, wherein the liver disordered- tissue or cell(s) is selected from the sample group listed above. Moreover the reference may include samples from healthy donors, preferably matched to the age and sex of the patient.

- [086] The term "reference library" refers to a library of clones representing expressed genes, which library is preferably prepared from non-diseased liver tissue or cells. The reference library may also derive from mRNA from non-diseased liver tissue or cells and may also comprise a data base comprising data on non-diseased tissue expression of nucleic acids. For comparison of the expression of the nucleic acids or polypeptides according to the invention in a sample isolated from a patient with the disordered liver, the reference library may comprise an expression library prepared from liver disorder-diseased liver tissue or cells and a data base comprising data on liver disorder-specific expression of nucleic acids.
- [087] The term "patient" within the meaning of the invention includes animals, preferably mammals, and humans, dead or alive. The patient is either suffering from a liver disorder, and/or other epithelial cancer, subject to analysis, preventive measures, therapy and/or diagnosis in the context of liver disorder and/or other epithelial cancer.
- [088] The term "subject" within the meaning of the invention includes animals, preferably mammals, and humans, dead or alive that is not suffering from a liver disorders and/or other epithelial cancer and thus represent a preferred appropriate control for the determination of differential expression of nucleic acids and/or polypeptides according to the invention in a patient.
- [089] The term "effective treatment" within the meaning of the invention refers to a treatment that preferably cures the patient from at least one disorder according to the invention and/or that improves the pathological condition of the patient with respect to at least one symptom associated with the disorder, preferably 3 symptoms, more preferably 5 symptoms, most preferably 10 symptoms associated with the disorder; preferably on a transient, short-term (in the order of hours to days), long-term (in the order of weeks, months or years) or permanent basis, wherein the improvement of the pathological condition may be preferably constant, increasing, decreasing, continuously changing or oscillatory in magnitude as long as the overall effect is a significant improvement of the symptoms compared with a control patient. Therapeutic efficacy and toxicity, e.g. ED<sub>50</sub> and LD<sub>50</sub> may be determined by standard pharmacological procedures in cell cultures or experimental animals. The dose ratio between therapeutic and toxic effects is the therapeutic index and may be expressed by the ratio

$LD_{50}/ED_{50}$ . Pharmaceutical compositions that exhibit large therapeutic indexes are preferred. The dose must be adjusted to the age, weight and condition of the individual patient to be treated, as well as the route of administration, dosage form and regimen, and the result desired, and the exact dosage should of course be determined by the practitioner.

- [090] The actual dosage depends on the nature and severity of the disorder being treated, and is within the discretion of the physician, and may be varied by titration of the dosage to the particular circumstances of this invention to produce the desired therapeutic effect. However, it is presently contemplated, that pharmaceutical compositions comprising of from about 0.1 to 500 mg of the active ingredient per individual dose, preferably of from about 1 to 100 mg, most preferred from about 1 to 10 mg, are suitable for therapeutic treatments.
- [091] The active ingredient may be administered in one or several dosages per day. A satisfactory result can, in certain instances, be obtained at a dosage as low as 0.1 mg/kg intravenously (i.v.) and 1 mg per orally (p.o.). Preferred ranges are from 0.1 mg/kg/day to about 10 mg/kg /day i.v. and from 1 mg/kg/day to about 100 mg/kg/day p.o.
- [092] In another aspect the invention relates to a fusion protein comprising a polypeptide according to the SEQ ID 1 to 93, or a functional variant thereof.
- [093] A "fusion protein" refers to a polypeptide comprising at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant or part thereof and at least one component A selected from polypeptide, peptide and/or peptide analogue that is linked to the polypeptide according to the invention by means of covalent or non-covalent binding such as e.g. hydrogen bonds, generally known to the person skilled in the art. Preferred examples of component A for fusion proteins are polypeptide, peptide and/or peptide analogues that facilitate easier detection of the fusion proteins; these are, for example, "green-fluorescent-protein", or variants thereof. Also included are fusion proteins that facilitate purification of the recombinant protein such as "His-tags", or fusions that increase the immunogenicity of the protein.
- [094] Fusion proteins according to the invention can be produced by methods generally known to the person skilled in the art. The fusion proteins according to the invention can be used for the diagnosis, prevention and or treatment of liver disorders and/or epithelial cancer.
- [095] Compared to the state of the art, these fusion proteins surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or epithelial cancers.
- [096] Preferred nucleic acids according to the invention comprise a sequence according to one of SEQ ID 94 to SEQ ID 186, or a variant thereof. In particular the invention

relates to nucleic acids according to the invention that have been isolated.

- [097] Compared to the state of the art, these nucleic acids and polypeptides surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or epithelial cancers.
- [098] The term "nucleic acid according to the invention" refers to the nucleic acids corresponding to the SEQ ID 94 to SEQ ID 186 and/or variants thereof.
- [099] The term "encoding nucleic acid" relates to a DNA sequence that codes for an isolatable bioactive polypeptide according to the invention or a precursor thereof. The polypeptide can be encoded by a sequence of full length or any part of the coding sequence as long as the biological function, such as for example receptor-activity, is essentially retained (cf. definition of functional variant).
- [100] It is known that small alterations in the sequence of the nucleic acids described above can be present, for example, due to the degeneration of the genetic code, or that untranslated sequences can be attached to the 5' and/or 3' end of the nucleic acid without significantly affecting the activity of the encoded polypeptide. This invention, therefore, also comprises so-called naturally occurring and artificially generated "variants" of the nucleic acids described above.
- [101] Preferably, the nucleic acids used according to the invention are DNA or RNA, preferably a DNA, in particular a double-stranded DNA. In particular the nucleic acid according to the invention may be an RNA molecule, preferably single-stranded or a double-stranded RNA molecule. The sequence of the nucleic acids may further comprise at least one intron and/or one polyA sequence.
- [102] Nucleic acids according to the invention can be produced by methods generally known to the skilled artisan and have also been described in detail below.
- [103] "Variant" within the meaning of the invention refers to all DNA sequences that are complementary to a DNA sequence, which hybridize with the reference sequence under stringent conditions and have a similar activity to the corresponding nucleic acid according to the invention. The nucleic acids according to the invention can also be used in the form of their antisense sequence.
- [104] "Variant" of the nucleic acids can also be homologues from other species with sequence identity preferably 80%, in particular 90%, most preferred 95%.
- [105] "Variant" of the nucleic acids can also be parts of the nucleic acid according to the present invention with at least about 8 nucleotides length, preferably with at least about 16 nucleotides length, in particular with at least about 21 nucleotides length, more preferably with at least about 30 nucleotides length, even more preferably with at least about 40 nucleotides length, most preferably with at least about 50 nucleotides length as long as the parts have a similar activity to the corresponding polypeptide according

- to the invention. Such a functional activity of an expressed polypeptide encoded by such a nucleic acid can be assayed using the functional assays described further above.
- [106] In a preferred embodiment of the invention the nucleic acid comprises a nucleic acid having a sequence complementary to a nucleic acid according to the invention, or a variant thereof. Preferably the nucleic acid comprises a non-functional mutant variant of the nucleic acid according to the invention, or a variant thereof.
- [107] In particular the invention relates to a nucleic acid having a complementary sequence wherein the nucleic acid is an antisense molecule or an RNA interference molecule.
- [108] The term "non-functional mutant variant of a nucleic acid" refers to a nucleic acid derived from a nucleic acid according to the invention, or a variant thereof having been mutated such that the polypeptide encoded by the non-functional mutant variant of the nucleic acid exhibits a biological activity which in comparison the non-mutated polypeptide is significantly decreased or abolished. Such activity of the polypeptide encoded by the non-functional mutant variant nucleic acid can be determined by means of a functional assay as described above for the evaluation of functional variants. The construction and screening of such non-functional mutant variant derived from a nucleic acid according to the invention are generally known to the person skilled in the art. Such "non-functional mutant variant of a nucleic acid" according to the invention can be expressed in a patient and will preferably abolish or diminish the level of expression of the targeted nucleic acid by competing with the native mRNA molecules for translation into polypeptides by the ribosomes.
- [109] "Stringent hybridization conditions" refer to those conditions in which hybridization takes place at 60°C in 2.5 xSSC buffer and remains stable following a number of washing steps at 37°C in a buffer of lower salt concentration.
- [110] The term "differential expression of a nucleic acid" refers to the relative level of expression of the nucleic acid in an isolated sample from a patient compared to the expression of the nucleic acid in a reference sample or a reference library. Definitions of reference samples and reference libraries have been described in detail above. The expression can be determined by methods generally known to the person skilled in the art. Examples of such methods include RNA blot (northern) analysis, nuclease protection, in situ hybridization, reverse transcriptase PCR (RT-PCR; including quantitative kinetic RT-PCR). cDNA and oligonucleotide microarrays are also included as such methods.
- [111]
- [112] Preferred embodiment of the invention relates to the HCC up-regulated phosphatidylinositol 4-kinase type II (PI4K2) polypeptide (Accession No. NP\_060895, SEQ ID 1) and to the nucleic acid PI4K2 (Accession No. NM\_018425, SEQ ID 94)

coding for the polypeptide. The prevalent phosphatidylinositol (PtdIns) phosphate kinase activity in many mammalian cell types is conferred by the widespread type 2 kinase (PI4K2). The human type 2 isoform has been partially purified from plasma membrane rafts of human A431 epidermoid carcinoma cells. (Minogue S. et al., 2001. *J Biol Chem.*, 18; 276(20):16635-40. Epub 2001 Feb 13). The predicted amino acid sequence revealed two isoforms: 2alpha and 2beta. The type 2alpha mRNA appears to be expressed ubiquitously in human tissues, and homologues appear to be expressed in all eukaryotes, but the gene encoding this PtdIns family member, however, has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.

- [113] Expression of this mRNA is elevated on average almost 2-fold relative to non-diseased liver in 46% of the HCC cases profiled (see Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in FNH (to even a higher extent than in HCC; Figure 9/Table 4A), but not in cirrhotic livers subjected to this cDNA microarray expression profiling procedure (Figure 9 and Table 3A). For this and the other nucleic acids according to the invention, this value for expression includes the expression value ratio data from all of the (28) HCC samples subjected to the cDNA microarray expression profiling experiments, including the values from samples that are not elevated by 2-fold or greater.
- [114] These results should confirm that the differential upregulated expression of the PI4K2 cDNA sequence is highly specific for disorders according to the invention. Therefore the PI4K2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention
- [115] In another preferred embodiment the nucleic acid according to the invention is the Zinc finger protein 216, ZNF216 cDNA (SEQ ID 95) which includes the open reading frame encoding ZNF216 polypeptide (SEQ ID 2). The ZNF216 polypeptide (GenBank sequence NP\_005998) is another embodiment of the invention. The ZNF216 gene is identical to the already reported cochlear-expressed gene (Scott DA. et al., 1998, *Gene*, 215(2): 461- 469) that maps to the DFNB7/11 interval for autosomal recessive non-syndromic hearing loss (ARNSHL) located on human chromosome 9q13-q21. Although ZNF216 gene is highly conserved between human and mouse, containing two regions that show homology to the putative zinc finger domains of other proteins, the polypeptide sequence has unknown function. Based on homology to bovine cDNA tag A2, ZNF216 may play a role in development of vessel endothelium from precursor cells suggesting a potential regulatory role in neovascularization. In this line it was recently suggested that ZNF216 and its A20-like zinc finger domain (ZnF-A20) have redundant and distinct role in regulating NF-kappaB activation and apoptosis (Huang J, published online ahead of print January 30, 2004, *J. Biol. Chem.*,

10.1074/jbc.M309491200). The gene encoding this zinc finger family member, however, has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.

- [116] The expression in HCC of RNA corresponding to assembled sequence SEQ ID 95 is confirmed experimentally. The initial sequence upregulated in HCC relative to non-diseased liver identified as an SSH cDNA clone corresponds to GenBank sequence NM\_006007. The expression of sequences of this clone has not previously been reported in liver or in HCC.
- [117] In a preferred embodiment the polypeptide according to the invention is the ZNF216 polypeptide (SEQ ID 2) which is surprisingly identified from an mRNA identified to be upregulated in HCC by an average of 16-fold relative to non-diseased liver (Figure 1) in 54% of the profiled cases (Table 3A). Similarly, elevated expression of the encoding mRNA relative to non-diseased liver is also evident in FNH but not in cirrhotic livers (see Figure 10, Tables 4A/5A).
- [118] cDNA sequences encoding this polypeptide and overlapping with this mRNA might be identified with reverse transcriptase PCR analysis and these nucleic acids can be similarly elevated in HCC. Furthermore, high expression specificity of the ZNF216 cDNA can be confirmed by quantitative assessment (Q-PCR) in HCC, FNH and Cirrhosis in comparison to expression pattern in normal tissue(s). The TaqMan procedure utilizing the parallel examination of both GAPDH and β-actin as reference genes should verify a large over expression of ZNF216 cDNA (SEQ ID 95) in HCC when compared to FNH and Cirrhosis. For TaqMan analyses ZNF 216 expression might be determined with gene specific oligonucleotide primers including ZNF216-p1, 5'-gagaggacaaaataactaccc-3', SEQ ID 195 (from nucleotide 611- 631 of SEQ ID 95 forward strand), ZNF216-p2, 5'-caattcaggagcttttcttca-3', SEQ ID 196 (from nucleotide 726-705 of SEQ ID 95 reverse strand) and the "hydrolysis" probe ZNF216-pr, 5'-tactgggctgagaaactgtatggactggctga-3' SEQ ID 198 (from nucleotide 694-663 of SEQ ID 95 reverse strand).
- [119] Furthermore, the expression of this HCC-deregulated gene correlates with proliferation of hepatoma cells, showing 2-fold and 3-fold increase of ZNF216 mRNA in Hep3B cell line upon 8 hours and 12 hours serum stimulation of quiescent cells, respectively (see Figure 106).
- [120] These results demonstrate that ZNF216 polypeptide (SEQ ID 2) and the nucleic acid encoding the polypeptide (SEQ ID 95) can be employed in the prevention and therapy of disorders according to the invention, in particular for the treatment of hyperplastic (including neoplastic) liver diseases. With regard to the treatment it is preferred to carry out the treatment such that the expression of the ZNF216 polypeptide or of the nucleic acid encoding the polypeptide is reduced and/or inhibited,

for example by administering antisense oligonucleotides or RNA interference molecules that specifically interact with the nucleic acid encoding the ZNF216 polypeptide. Alternatively the treatment may be carried out such that the activity of the ZNF216 polypeptide is reduced and/or inhibited, for example by administering an antibody directed against the ZNF216 polypeptide or an antibody fragment thereof which block the activity of the ZNF216 polypeptide to a patient in need of such treatment. Compared to the state of the art, this ZNF216 polypeptide and/or ZNF216 nucleic acid surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective.

- [121] In another preferred embodiment the nucleic acid according to the invention is the AKR1C1 nucleic acid (SEQ ID 96) that represents the sequence of an HCC deregulated cDNA clone. This gene encodes the Aldo-keto reductase family 1 member C1 sharing high sequence identity with three other gene members and is localized at chromosome 10p15-p14 (Stolz, A. et al, 1993, J. Biol. Chem., 268: 10448-10457). These enzymes catalyze the conversion of aldehydes and ketones to their corresponding alcohols by utilizing NADH and/or NADPH as cofactors. The enzymes display overlapping but distinct substrate specificity and may assist in the rapid intracellular transport of bile acids from the sinusoidal to the canalicular pole of the cell, and thereby having a role in monitoring the intrahepatic bile acid concentration. The AKR1C1 regulates progesterone action by converting the hormone into its inactive metabolite 20 alpha-hydroxyprogesterone, and toxicologically this enzyme activates polycyclic aromatic hydrocarbon trans-dihydrodiols to redox-cycling o-quinones. However, the significance of its potent induction by Michael acceptors and oxidative stress is unknown (Burczynski ME. et al., J Biol Chem., 2001, 276(4): 2890- 2897). Expression of sequences corresponding to this clone has been already reported in several tissues (including liver) and some tumors (including prostate, breast; e.g., Wiebe JP and Lewis MJ., 2003, BMC Cancer, 3(1): 9) but the sequence has not previously been described to be upregulated in HCC.
- [122] In liver samples from HCC patients expression of the mRNA encoding this polypeptide is surprisingly elevated relative to non-diseased liver by an average value of 7-fold in 79% cases profiled (Figure 1, Table 3A). Elevated expression of the encoding mRNA relative to non-diseased liver is also evident in FNH but not in cirrhotic livers (Figure 11, Table 4A/5A).
- [123] Independent RT-PCR analysis of expression levels of AKR1C1 mRNA in HCC relative to normal liver are determined with gene specific oligonucleotide primers including: AKR1C1-p1, 5'- ttggaaaggtaactgaaaaatct-3' (SEQ ID 199) and AKR1C1-p2, 5'-gctggctcggttgaagtgg-3' (SEQ ID 200) verifying the specific expression of this gene (SEQ ID 96) in HCCs when compared to normal liver samples (Figure 104).

- [124] Furthermore, the expression of this HCC-deregulated mRNA is showing 2-fold and 5-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [125] The target gene encoded polypeptide enzymatic activity clearly shows the correlation between the upregulation of AKR1C1 gene transcript in HCC with the approximately 2-fold induction of the AKR1C1 enzymatic activity suggesting that elevated expression of this sequence is correlated with human liver tumor cell proliferation (Table 9).
- [126] In yet another preferred embodiment the nucleic acid according to the invention is the dUTP pyrophosphatase, dUT nucleic acid (SEQ ID 97) which has been disclosed before (Accession No NM\_001948) encoding the dUT polypeptide (Accession No NP\_001939, SEQ ID 4). dUTP pyrophosphatase involved in nucleotide metabolism produces dUMP (through hydrolysis of dUTP), the immediate precursor of thymidine nucleotides and decreases the intracellular concentration of dUTP so that uracil cannot be incorporated into DNA (McIntosh E.M. et al., 1992; PNAS, 89: 8020-8024). Nuclear DUT- DUT-N (18 kDa) and mitochondrial DUT-M (23 kDa) isoforms of the protein have been identified in humans and arise from the same gene by the alternative use of 5' exons. DUT-N protein and mRNA levels are tightly regulated to coincide with DNA replication. DUT-N is phosphorylated by cyclin-dependent kinases (Ladner R.D., 1996, J. Biol. Chem., 271: 7745-7751). Recently, it has been shown that these isoforms are aberrantly expressed in some cancers (Pugacheva E.N. et al., 2002, Oncogene, 21(30): 4595- 4600) but the geneencoding these isoforms has not previously been reported to be expressed at elevated levels in HCC.
- [127] Expression of the mRNA encoding the dUT polypeptide is induced by an average of 7-fold relative to non-diseased liver in 47% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH by an average 10.6-fold induction relative to non-diseased liver in 40% of the FNH cases profiled but not in the cirrhotic livers (Figure 12, Tables 4A/5A).
- [128] Independent RT-PCR analyses of expression levels of dUT mRNA might be determined with gene specific oligonucleotide primers including primers for TaqMan analysis, for example: dUT-p1: 5'-ccgcgggtacgacctg-3', SEQ ID 201 (from nucleotide 153-169 of the SEQ ID 97 forward strand), dUT-p2, 5'-agccacttccataacacc-3', SEQ ID 202 (from nucleotide 268-249 of the SEQ ID 97 reverse strand) and fluorescently-labeled probe dUT-pr, 5'-tgtccgtttcacaacagcttctccataggt-3', SEQ ID 203 (spanning bases from 227-197 of the SEQ ID 97 reverse strand).
- [129] Furthermore, a specific high-affinity inhibitor blocks proliferation of hepatoma cells (Hep3B/HepG2); the specific small molecule inhibitor (DMT-dU (5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine; Sigma; No. D7279) (Persson, T. et al.,

- 1996, *Bioorg. Med. Chem.*, 4: 553-556) stimulates a cytostatic and anti-proliferative response (Figures 108 to 109) in these cells.
- [130] These results should confirm that the differential upregulated expression of the dUT cDNA sequence is highly specific for disorders according to the invention. Therefore the dUT polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [131] Another preferred embodiment of the invention relates to the HCC up-regulated Paired basic amino acid cleaving enzyme 4, PACE4 polypeptide (Accession No. NP\_002561, SEQ ID 5) and to the nucleic acid PACE4 (Accession No. NM\_002570, SEQ ID 98) coding for the polypeptide. The protein encoded by this gene belongs to the subtilisin/kexin-like proprotein convertase family while representing a calcium-dependent serine endoprotease that can efficiently cleave precursor proteins at their paired basic amino acid processing sites [consensus site: RX(K/R)R]. Expression of this gene has been already reported in several tissues (including liver) and suggested to play a role in tumor progression (in colon cancer, e.g. Khatib AM. et al., *J Biol Chem.*, 2001, 276(33):30686-30693), but the sequence has not previously been described to be upregulated in HCC.
- [132] Expression of this mRNA is elevated on average by 24-fold relative to non-diseased liver in 57% of the HCC cases profiled (see Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in FNH (to a lesser extent than in HCC; Figure 13/Table 4A), but not in cirrhotic livers subjected to this cDNA microarray expression profiling procedure (Figure 13 and Table 5A).
- [133] Taqman RT-PCR analyses of expression levels of PACE4 mRNA (Assay ID Catalogue Number: Hs00159844\_m1, Applied Biosystems, USA, see Table 6) verify and confirm the specific elevation of the PACE4 cDNA (Figure 3A) showing up-regulation in 7/17 HCCs, 3/3 FNHs, in 3/3 Cirrhosis and in 0/3 non-neoplastic livers (NNL).
- [134] Furthermore, the expression of this HCC-deregulated mRNA is showing 2.4-fold and 6.7-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [135] These findings suggest a functionally significant role for PACE4 in disorders according to the invention, especially in HCC. Therefore the PACE4 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [136] In another preferred embodiment invention relates to the HCC up-regulated Transforming growth factor Beta-induced I, BIGH3 polypeptide (Accession number NP\_000349; SEQ ID 6) and to the nucleic acid BIGH3 (Accession number NM\_000358; SEQ ID 99) coding for the polypeptide. cDNA corresponding to this

mRNA has been identified in cDNA libraries expressed in many tissues but at low levels; and highly expressed in the corneal epithelium. This gene known to be induced by TGF-beta binds specifically to collagens and may regulate cell adhesion (Skonier J. et al., 1994, DNA Cell Biol., 6: 571- 584). BIGH3 gene has been shown to be up-regulated in oesophageal adenocarcinoma tissue (Hourihan RN. et al., 2003, Anticancer Res., 23(1A):161-5), but the sequence has not previously been reported to be up-regulated in disorders according to the invention, in particular in HCC.

- [137] Expression of this mRNA is elevated on average by 5-fold relative to non-diseased liver in 79% of the HCC cases profiled (see Figure 1 and Table 3A). Similar analysis reveals elevated expression of this mRNA in 80% of the FNH cases profiled (Figure 14/Table 4A).
- [138] The HCC induction of the BIGH3 gene is then verified by amplification of the sequence from the cDNA with primer pairs specific to BIGH3 nucleic acid (Assay ID Catalogue Number: Hs00154671\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method and also confirming that the BIGH3 mRNA is not deregulated in cirrhosis (Figure 100).
- [139] These findings suggest that the BIGH3 polypeptide and/or a functional variant thereof and/or the encoding nucleic acid and/or a variant thereof can be utilized for the diagnosis, prevention and treatment of disorders according to the invention (in particular for the diagnosis of in HCC and FNH).
- [140] In another preferred embodiment the polypeptide according to the invention is the PRKAR1A polypeptide (Accession number NP\_002725; SEQ ID 7) which is surprisingly identified from an mRNA identified to be upregulated in HCC (Accession number NM\_002734; SEQ ID 100). PRKAR1A, a critical component of the cAMP signaling pathway represents a type I regulatory alpha subunit of cAMP-dependent protein kinase, suggested as a dominant negative regulator of transcription in somatic cell hybrids (Sandberg, M. et al., 1987, Biochem. Biophys. Res. Commun., 149:939-945). The inactive form of the enzyme is composed of two regulatory chains and two catalytic chains. Activation by cAMP produces two active catalytic monomers and a regulatory dimer that binds four cAMP molecules (Jones, K.W. et al., 1991, Cell, 66:861-872). Structural information of the protein is not yet obtained. PRKAR1A is likely to be expressed in many tissues. However, the sequence has not previously been reported to be up-regulated in disorders according to the invention, in particular in HCC.
- [141] The mRNA encoding this polypeptide is elevated an average of 3-fold relative to non-diseased liver in 39% HCCs profiled (see Figure 1 and Table 3A) and similarly in FNH, but not in cirrhotic livers (Figure 15 and Tables 4A/5A).
- [142] Independent verification analyses of expression levels of PRKAR1A mRNA might

be determined with gene specific oligonucleotide primers including, for example primer pairs specific to PRKAR1A nucleic acid (Assay ID Catalogue Number: Hs0000267597\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method.

- [143] These results suggest that the strongly upregulated expression of the PRKAR1A cDNA sequence is highly specific for disorders according to the invention, especially in HCC and FNH. Therefore the PRKAR1A polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [144] In a further preferred embodiment the invention relates to the s.t. Ocia nucleic acid (Accession number NM\_017830; SEQ ID 101) coding for the Ovarian carcinoma immunoreactive antigen, s.t. Ocia polypeptide (Accession number NP\_060300; SEQ ID 8) which may be expressed at low levels in many tissues and known to be elevated in ovarian cancer (Luo LY. et al., 2001, Biochem Biophys Res Commun., 280(1): 401- 406). The gene encoding this putative tumor antigen, however, has not previously been described in liver cancer and not being reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.
- [145] The mRNA encoding this polypeptide is elevated an average of 2.4-fold relative to non-diseased liver (NL) in 32% HCCs profiled (Figure 1 and Table 3A). mRNA levels are marginally elevated in FNH relative to non-diseased liver (Figure 16 and Table 4A). This mRNA is otherwise detected only infrequently in normal and cirrhotic livers subjected here to expression profiling.
- [146] Independent RT-PCR analyses of expression levels of s.t.Ocia mRNA are determined with gene specific oligonucleotide primers (Assay ID Catalogue Number: Hs00215197\_m1, Applied Biosystems, USA) in the Assay-On-Demand quantitative PCR method confirming that the s.t.Ocia mRNA is not deregulated in cirrhosis (Figure 101/ Table 6).
- [147] These results suggest that the upregulated expression of the s.t.Ocia cDNA sequence is highly specific for disorders according to the invention, especially HCC. Therefore the s.t.Ocia polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention, in particular for the diagnosis of HCC and FNH.
- [148] In yet another preferred embodiment the invention relates to the serologically defined colon cancer antigen 28, SDCCAG28 nucleic acid (Accession number NM\_006645; SEQ ID 102). The cDNA clones corresponding to the SDCCAG28 mRNA have been identified in many tissues including colon and other cancers (Scanlan, M.J. et al., 1998, Int. J. Cancer, 76:652-658), but neither this mRNA nor the encoded polypeptide have been previously implicated in disorders according to the

invention, in particular in liver disorders or in HCC. The invention further relates to the polypeptide encoding for the SDCCAG28, a predicted polypeptide of 40.5 kDa (SDCCAG28, SEQ ID 9; NP\_006636 in the GenBank database). The presence of this polypeptide has not been described in any cell or tissue and its function has not been reported, primary sequence suggests similarity to phosphatidylcholine transfer protein 2 (Lai,C.-H., 2000, Genome Res., 10: 703- 713).

- [149] mRNA encoding this polypeptide is elevated an average 3-fold in 71% of the HCCs examined and similarly by nearly 7-fold in FNH (40% cases), all relative to non-diseased liver (Figures 1 and 17, Tables 3A/ 4A).
- [150] Independent RT-PCR analyses of expression levels of SDCCAG28 mRNA are determined with gene specific oligonucleotide primers (Assay ID Catalogue Number: Hs00246405\_m1) as described for the BIGH3 gene, confirming that the SDCCAG28 mRNA is not deregulated in cirrhosis (Figure 3B). The Assay-on-Demand Q-PCR shows upregulation in 8/17 HCCs, 2/3 FNHs, 1/3 Cirrhosis and 0/3 NNL of profiled cases.
- [151] Additionally, expression of this HCC-deregulated gene correlates with proliferation of hepatomacells, showing almost 2-fold and 4- fold increase of SDCCAG28 mRNA in hepatoma cell line (Hep3B) upon 8 hours and 12 hours serum stimulation of quiescent cells, respectively (see Figure 106).
- [152] Furthermore, the protein expression analyses show increase of SDCCAG28 protein signal in HCCs when compared to normal liver (Figure 105). The results support the functional significance of SDCCAG28 for disorders according to the invention, in particular for HCC.
- [153] These data suggest that SDCCAG28 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [154] In yet another preferred embodiment the nucleic acid according to the invention is the Peroxiredoxin 1 transcript variant 1, PRDX1 nucleic acid (SEQ ID 103) which has been disclosed before (Accession No. NM\_002574) encoding the PRDX1 polypeptide (Accession No. NP\_002565; SEQ ID 10), a member of the peroxiredoxin family of antioxidant enzymes (Prxs) that also control cytokine-induced peroxide levels which mediate signal transduction in mammalian cells. Prxs can be regulated by changes to phosphorylation, redox and possibly oligomerization states (Wood, Z.A., et al., 2003, Trends Biochem. Sci., 28 (1): 32- 40). Three transcript variants encoding the same protein have been identified for this gene. The PRDX1 has been shown to be up-regulated in human breast cancer (Noh DY et al., 2001, Anticancer Res., 21 (3B): 2085- 2090). However, neither PRDX1 nucleic acid nor the PRDX1 polypeptide had been recognized with respect to elevated levels in HCC.

- [155] Expression of the mRNA encoding this polypeptide is elevated an average of 3.6-fold relative to non-diseased liver in 71% HCC cases profiled (Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in other liver disorders (FNH, Cirrhosis) (Figure 18 and Tables 4A/5A).
- [156] Independent verification analyses of expression levels of PRDX1 mRNA might be determined with gene specific oligonucleotide primers including, for example primer pairs specific to PRDX1 nucleic acid (Assay ID Catalogue Number: Hs00602020\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method.
- [157] These findings suggest that the PRDX1 polypeptide and/or a functional variant thereof and/or the encoding nucleic acid and/or a variant thereof can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [158] In yet another preferred embodiment the nucleic acid according to the invention is the Transmembrane trafficking protein, TMP21 nucleic acid (SEQ ID 104) which has been disclosed before (Accession No NM\_006827) encoding the TMP21 polypeptide (Accession No. NP\_006818, SEQ ID 11). Tmp21 is involved in biosynthetic transport from the endoplasmic reticulum to the Golgi complex (Blum,R., et al., 1996, J. Biol. Chem. 271, 17183- 17189). There are two known Tmp21 isoforms -I and -II, wherein hum-Tmp21-II is transcribed, but not translated (Horer J et al., 1999, DNA Seq., 10(2): 121-6). Recent data report that phorbol esters translocate beta2-chimaerin (member of "non-protein kinase C" (PKC) phorbol ester/diacylglycerol receptors family) to the perinuclear region and promote its association with Tmp21-I in a PKC-independent manner (Wang H and Kazanietz MG, J Biol Chem, 2002; 277(6): 4541- 4550). Thus, Tmp21-I might be serving as an anchoring protein that determines the intracellular localization of these novel phorbol ester receptors. The gene encoding both isoforms has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.
- [159] Expression of the mRNA encoding the TMP21 polypeptide is induced by an average of 8.5-fold relative to non-diseased liver in 26% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH but not in the cirrhotic livers (see Figure 19 and Tables 4A/5A).
- [160] Furthermore, the expression of this HCC-deregulated mRNA is showing 2.6-fold and 3.5-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [161] These results show that the differential upregulated expression of the TMP21 cDNA sequence is highly specific for disorders according to the invention. Therefore the TMP21 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention
- [162] In yet another preferred embodiment the nucleic acid according to the invention is

the IQ motif containing GTPase-activating protein 2, IQGAP2 nucleic acid (SEQ ID 105) which has been disclosed before (Accession No. NM\_006633) encoding the IQGAP2 polypeptide (Accession No. NP\_006624, SEQ ID 12). This liver specific protein has been reported to harbor a potential actin binding domain and to interact with calmodulin and Rho family GTPases (Brill S et al., 1996, Mol Cell Biol.; 16(9): 4869-4878). The recent observations identify a physiologic scaffolding function for IQGAP2 representing a functional genomic unit in humans uniquely evolved to regulate thrombin-induced plateletcytoskeletal actin reorganization (Schmidt VA., 2003, Blood, 101(8): 3021-3028), but the gene encoding these isoforms has not previously been reported to be expressed at elevated levels in HCC.

- [163] Expression of the mRNA encoding the IQGAP2 polypeptide is induced by an average of 4-fold relative to non-diseased liver in 71% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH but not in the cirrhotic livers (Figure 20 and Tables 4A/5A).
- [164] The HCC induction of the IQGAP2 gene can then be verified by amplification of the sequence from the cDNA with primer pairs specific to IQGAP2 nucleic acid (Assay ID Catalogue Number: Hs00183606\_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method. These data suggest that the IQGAP2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [165] In yet another preferred embodiment the nucleic acid according to the invention is the member of RAS oncogene family, Rab2 nucleic acid (SEQ ID 106) which has been disclosed before (Accession No. NM\_002865) encoding the Rab2 polypeptide (Accession No. NP\_002865, SEQ ID 13). The small GTPase Rab2 is a resident of pre-Golgi intermediates and required for protein transport from the endoplasmic reticulum (ER) to the Golgi complex (Tisdale, E. J. et al., 1992, J. Cell Biol., 119: 749- 761). The Rab2 protein, like all small GTPases, contains conserved GTP-binding domains as well as hypervariable carboxyl-terminal and amino-terminal domains. It is suggested that the NH<sub>2</sub> terminus of Rab2 is required for its function and for direct interaction with components of the transport machinery involved in the maturation of pre-Golgi intermediates. Rab2 interacts directly with atypical protein kinase C (aPKC) iota/lambda and inhibits aPKC iota/lambda-dependent glyceraldehyde-3-phosphate dehydrogenase phosphorylation (Tisdale, E.J.2003, J Biol Chem.; 278(52):52524-30). Though overexpression in lymphoid and myeloid malignancies has been reported, neither Rab2 nucleic acid nor the Rab2 polypeptide has been recognized with respect to elevated levels in disorders according to the invention, preferably in HCC.
- [166] Expression of the mRNA encoding this polypeptide is elevated an average of 5-fold relative to non-diseased liver in 71% of the HCC cases profiled (Figure 2, Table 3A).

Elevated expression of the encoding mRNA is also evident in FNH but not in cirrhosis (Figure 21 and Tables 4A/ 5A).

- [167] Furthermore, the expression of this HCC-deregulated mRNA is 5.5-fold and almost 8-fold increased by serum stimulation of quiescent hepatoma cells (Hep3B) upon 8 hours and 12 hours, respectively (Figure 106).
- [168] These findings suggest that the Rab2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [169] In another preferred embodiment the nucleic according to the invention is the Clone 6 cDNA (OBCL6, SEQ ID 125), which is assembled by identification of overlapping sequences from the non-redundant GenBank sequence databases. The initial EST sequence upregulated in HCC relative to non-diseased liver identified with cDNA microarray analysis shows the highest similarity (almost 100% identical) to human genomic clone AL035420 (human DNA sequence from clone RP4-550H1 on chromosome 20q11.1-11.22 containing a high mobility group protein pseudogene). It may be that extending the length of this HCC-deregulated cDNA sequence will reveal that the corresponding RNA encodes a not yet described human protein. Another alternative is that the encoded polypeptide may result from one of the small open reading frames in this sequence. Even further, this RNA may be not translated into polypeptide but may have functional (e.g., regulatory) properties itself.
- [170] Surprisingly the sequence from this mRNA is represented at much higher levels in HCC than in normal human liver. This mRNA is elevated an average of 6-fold or more relative to non-diseased liver in 68% of HCC samples profiled (Table 3B, Figure 3). Clone 6 is also elevated 8-fold or more relative to non-diseased liver in FNHs examined, but not in cirrhosis (Figure 40, Tables 4b/5B). Independent RT-PCR analyses of expression levels of might be determined with gene specific oligonucleotide primers. These results show that the strongly upregulated expression of the Clone 6 cDNA sequence is highly specific for disorders according to the invention, especially in HCC and FNH.
- [171] Overexpression of the polypeptide and/or the encoding RNA therefore, may be useful for diagnosis of liver disorders. These results clearly demonstrate that the Clone 6 polypeptide and the nucleic acid (SEQ ID 125) encoding the polypeptide (SEQ ID 32) and a functional variant thereof can be utilized for diagnosis, prevention and treatment of disorders according to the invention, in particular for HCC and FNH.
- [172] With regard to the treatment it is preferred to carry out the treatment such that the expression of the OBCL6 polypeptide and/or a functional variant thereof; or of the nucleic acid encoding the polypeptide and/or a functional variant thereof is reduced and/or inhibited, for example by administering antisense oligonucleotides or small in-

terfering RNA molecules that specifically interact with the nucleic acid defined in SEQ ID 125 potentially encoding the OBCL6 polypeptide and/or a functional variant thereof.

- [173] The treatment may be carried out, for example, such that the activity of the Clone 6 polypeptide and/or a functional variant thereof are reduced and/or inhibited, for instance by administering an antibody directed against the OBCL6 polypeptide and/or a functional variant thereof, or an antibody fragment thereof which block the activity of the Clone 6 polypeptide and/or a functional variant thereof to a patient in need of such treatment. Compared to the state of the art, the OBCL6 polypeptide and/or a functional variant thereof; and/or OBCL6 nucleic acid surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancer.
- [174] Alternatively, the OBCL6 RNA may be not translated into a polypeptide but may have functional (e.g., regulatory) properties itself. The disease relevance of non-coding regulatory RNAs is now becoming apparent as evidenced, for example, by the role of the non-coding RNA "bantam" involved in cellular proliferation in the eukaryote *Drosophila* (Brennecke J, Hipfner DR, Stark A, Russell RB, Cohen SM. *Cell* (2003) Apr4; 113(1):25-36), and by microRNA-23 that interacts with the transcription factor HES-1 to hinder neuronal differentiation (Kawasaki, H. and Tiara, K. *Nature*, 2003, 423:838-842).
- [175] For example, reduction of the level of Clone 6 RNA (knock-down) in proliferating human hepatoma cells with small interfering RNA (siRNA) oligonucleotides can support a functionally significant role for elevated expression of Clone 6 RNA in liver disorders, especially liver cancer.
- [176] Further aspect of the invention represents an isolated polypeptide comprising a sequence according to the SEQ ID 32 or a functional variant thereof. Another preferred embodiment is a fusion protein, wherein the fusion protein contains the polypeptide according to the SEQ ID 32 or a functional variant thereof.
- [177] Yet another preferred feature of the invention is an isolated nucleic acid according to the SEQ ID 125 or a variant thereof. Further preferred embodiment represents the nucleic acid according to the SEQ ID 125 or a variant thereof, wherein the nucleic acid is a single-stranded or double-stranded RNA.
- [178] Still another aspect of the invention represents a nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof.
- [179] Yet another feature of the invention is a vector, wherein the vector contains a nucleic acid selected from the group consisting of a nucleic acid according to the SEQ

ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. The vector is preferably selected from the group consisting of a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.

- [180] Another aspect of the invention represents a cell, wherein the cell contains the nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. In another preferred embodiment the cell is transformed with a vector containing a nucleic acid selected from the group consisting of a nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. In still further embodiment of the invention the cell is a transgenic embryonic non-human stem cell.
- [181] Yet another feature of the invention represents a transgenic non-human mammal, wherein the transgenic non-human mammal contains the nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof.
- [182] Further aspect is an antibody or an antibody fragment thereof, wherein the antibody is directed against the polypeptide according to the SEQ ID 32 or a functional variant thereof, or against a nucleic acid coding for the polypeptide.
- [183] The cDNA expression levels relative to a non-diseased liver (NL) reference sample of sequences according to the invention assessed in tissues from human liver disorders, including Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh.) samples are shown in Tables 3A to 3D, 4A to 4D and 5A to 5D, respectively (median of log<sub>2</sub> values data between diseased and non-diseased samples obtained from competitive hybridisation to custom-made cDNA microarrays). Median represents 50<sup>th</sup> percentile of values for each sequence (SEQ ID 94 to 186) per group (HCC, FNH and Cirrh.). Number of the samples profiled and the calculated percentage of valid/detectable signals (% detected) are provided. (\*) annotates duplicates of the HCCs, FNHs, and Cirrh. profiled.
- [184]
- [185]
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[193]

[194]

[195]

[196] **Tables 3A to 3D: Summary of c DNA microarray expression level ratios (HCC vs NL).**

**Table 3A**

Gene	Median log <sub>2</sub>	Median-fol d induction	HCC microarray hybridizatio ns (No)	Detected (%)
PI4K2	0.75	1.68	28	54
ZNF216	4.01	16.07	28	54
AKR1C1	2.78	6.86	56	79
dUT	2.80	6.96	28	46
PACE4	4.60	24.23	28	57
BIGH3	2.31	4.95	28	79
PRKAR1A	1.73	3.32	56	39
s.t. Ocia	1.29	2.45	56	32
SDCCAG28	1.64	3.12	28	71
PRDX1	1.86	3.63	56	71
TMP21	3.08	8.46	56	27
IQGAP2	2.00	3.99	28	71
Rab2	2.38	5.21	28	71
ARF1	3.12	8.71	28	54
HSPC1	2.19	4.55	56	23
TLR5	1.55	2.93	28	64
GAP-SH3	1.72	3.29	28	71
Crisp-3	1.92	3.77	28	57
TM4SF4	1.70	3.24	56	32
AQP9	1.17	2.25	84	36
LOC51716	0.85	1.80	112	72
Cystatin	3.28	9.70	28	46

Ki	2.55		5.85		28		68
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[197]

[198]

**Table 3B**

Gene	Median log <sub>2</sub>	Median-fol d induction	HCC microarray hybridizati ons (No)	Detected (%)
Porimin	3.00	7.97	56	9
PTPRZ1	1.94	3.84	84	13
Rab9 effector p40	3.49	11.26	28	39
RBap48	3.10	8.58	28	50
PABPC1	3.69	12.89	28	61
NF1/B2	0.72	1.65	56	57
RPL7	3.08	8.46	140	19
HNRPDL	1.78	3.44	140	26
OBCL6	2.59	6.02	28	32
SNRPG	2.39	5.26	56	23
KREV-1	1.51	2.85	28	61
DRB5	1.62	3.08	28	79
PKCI-1	0.62	1.54	28	82
IMPACT	4.03	16.37	28	36
BMI	3.52	11.48	56	16
G3BP	3.40	10.56	28	46
RHEB2	3.31	9.92	28	57
MARCKS	2.68	6.43	56	43
ALURBP	3.01	8.04	28	36
PPGB	2.70	6.49	28	79
GRB2	2.75	6.71	28	43
TRAP1	3.24	9.44	56	20
PDHB	3.05	8.25	28	46

[199]

Table 3C

Gene	Median log <sub>2</sub>	Median-fol d induction	HCC		Detected (%)
			microarray	hybridizati ons (No)	
DAD-1	2.02	4.06		56	63
PSME2	2.61	6.11		28	32
QP-C	2.27	4.83		28	79
MTRPS33	2.63	6.20		56	25
ARF4	3.02	8.12		28	36
DDB1	2.23	4.70		28	32
GNG10	1.80	3.49		56	66
DP1	2.68	6.40		56	27
ATP1B1	2.35	5.11		56	39
SLC25A3	2.25	4.75		56	39
SNC6	1.86	3.63		28	61
OMG	2.17	4.51		28	36
PB1S	2.17	4.51		28	36
RPS21	1.75	3.35		112	62
MMP-2	1.80	3.48		28	39
YWHAZ	1.87	3.66		28	89
PPP3R1	1.83	3.56		56	46
CTNNA1	1.11	2.15		112	29
ADCYAP1	0.74	1.67		28	4
syntenin	1.93	3.82		28	79
topoisomeras e IIb	2.25	4.76		28	18
UMP-CMPK	1.63	3.09		84	18
PSMD4	2.48	5.59		56	29
hu_BTF3	1.83	3.57		28	86
rhoA	1.68	3.21		28	68

[200]

**Table 3D**

Gene	Median log <sub>2</sub>	HCC			Detected (%)
		Median-fol d induction	microarra y hy- bridization	s (No)	
LDH-B	1.58	2.99	56		63
TBXA2-R	1.64	3.12	56		38
hu_CAP	1.58	2.98	28		54
hu_PP2a-cat	1.49	2.82	196		6
SDHC	1.55	2.94	56		36
hu_GDP-di2	1.54	2.90	28		32
CCNI	1.70	3.26	28		64
Mac25	1.58	2.98	28		14
TBP	1.10	2.14	84		39
FDX1	1.79	3.46	28		36
NLVCF	1.34	2.53	56		32
GNG3	1.32	2.49	28		32
RCN2	1.88	3.67	56		25
hu_adk2	1.00	2.00	28		46
hu_Dcsa19	1.54	2.91	28		93
c/EBP	1.64	3.11	84		24
Rab GG	1.29	2.44	28		54
**c-syn	2.24	4.74	56		18
PPP1R15A	1.34	2.54	28		36
SCL5A6	3.70	13.00	28		36

[201]

[202] [(\*\*)] c-syn represents three alternative nucleotide transcripts with corresponding three protein products

[203]

[204] **Tables 4A to 4D: Summary of c DNA microarray expression level ratios (FNH**

vs NL).

**Table 4A**

Gene	Median log <sub>2</sub>	Median-fol d induction	FNH microarray hybridizati ons (No)	Detected (%)
PI4K2	1.97	3.91	5	80
ZNF216	2.86	7.25	5	40
AKR1C1	1.18	2.27	10	70
dUT	3.41	10.60	5	40
PACE4	3.65	12.57	5	60
BIGH3	2.02	4.06	5	80
PRKAR1A	1.71	3.28	10	40
s.t. Ocia	0.48	1.40	10	40
SDCCAG28	2.73	6.61	5	40
PRDX1	0.65	1.57	10	70
TMP21	3.68	12.81	10	20
IQGAP2	2.33	5.01	5	80
Rab2	2.57	5.95	5	60
ARF1	2.07	4.18	5	40
HSPC1	2.19	4.57	10	30
TLR5	1.95	3.86	5	60
GAP-SH3	2.86	7.24	5	60
Crisp-3	1.45	2.73	5	60
TM4SF4	2.07	4.19	10	50
AQP9	0.60	1.51	15	33
LOC51716	0.67	1.59	20	75
Cystatin	2.10	4.28	5	20
Ki	2.14	4.41	5	60

[205]

**Table 4B**

Gene	Median log <sub>2</sub>	Median-fol	FNH	Detected (%)
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		d induction	microarray hybridizati ons (No)		
Porimin	NA	NA	10		0
PTPRZ1	2.89	7.43	15		20
Rab9 effector p40	NA	NA	5		0
RBap48	3.54	11.67	5		40
PABPC1	1.81	3.50	5		40
NF1/B2	0.64	1.56	10		70
RPL7	3.67	12.69	25		12
HNRPDL	2.25	4.75	25		16
OBCL6	3.07	8.42	5		40
SNRPG	1.38	2.60	10		20
KREV-1	3.73	13.29	5		80
DRB5	0.82	1.77	5		80
PKCI-1	-0.03	0.98	5		80
IMPACT	NA	NA	5		0
BMI	2.97	7.82	10		10
G3BP	3.60	12.13	5		20
RHEB2	3.28	9.68	5		20
MARCKS	1.75	3.35	10		40
ALURBP	1.15	2.22	5		20
PPGB	2.35	5.10	5		80
GRB2	2.89	7.41	5		20
TRAP1	NA	NA	10		0
PDHB	3.79	13.79	5		60

[206]

Table 4C

Gene	Median log <sub>2</sub>	Median-fol d induction	FNH		Detected (%)
			microarray	hybridizati ons (No)	
DAD-1	2.01	4.02	10		60
PSME2	NA	NA	5		0
QP-C	1.15	2.21	5		80
MTRPS33	2.88	7.34	10		10
ARF4	3.78	13.76	5		80
DDB1	2.97	7.86	5		40
GNG10	2.87	7.32	10		70
DP1	2.58	5.97	10		20
ATP1B1	1.70	3.26	10		10
SLC25A3	2.95	7.74	10		30
SNC6	0.76	1.69	5		40
OMG	3.31	9.94	5		60
PB1S	1.39	2.62	5		20
RPS21	1.41	2.65	20		50
MMP-2	4.28	19.41	5		20
YWHAZ	1.00	2.00	5		80
PPP3R1	1.54	2.90	10		30
CTNNA1	2.08	4.24	20		40
ADCYAP1	NA	NA	5		0
syntenin	1.83	3.55	5		80
topoisomeras e IIb	2.96	7.75	5		40
UMP-CMPK	3.02	8.11	15		27
PSMD4	1.34	2.53	10		10
hu_BTF3	1.01	2.01	5		80
rhoA	1.16	2.23	5		60

**Table 4D**

Gene	Median log <sub>2</sub>	Median-fol d induction	FNH		Detected (%)
			microarra y hy- bridization	s (No)	
LDH-B	1.58	2.99	10		80
TBXA2-R	1.64	3.12	10		40
hu_CAP	1.58	2.98	5		60
hu_PP2a-cat	1.49	2.82	35		11
SDHC	1.55	2.94	10		0
hu_GDP-di2	1.54	2.90	5		40
CCNI	1.70	3.26	5		80
Mac25	1.58	2.98	5		20
TBP	1.10	2.14	15		27
FDX1	1.79	3.46	5		40
NLVCF	1.34	2.53	10		10
GNG3	1.32	2.49	5		80
RCN2	1.88	3.67	10		10
hu_adk2	1.00	2.00	5		80
hu_Dcsa19	1.54	2.91	5		100
c/EBP	1.64	3.11	15		20
Rab GG	1.29	2.44	5		60
**c-syn	2.24	4.74	10		10
PPP1R15A	1.34	2.54	5		20
SCL5A6	3.70	13.00	5		20

[208]

[209] [(\*\*)] c-syn represents three alternative nucleotide transcripts with corresponding three protein products

[210]

[211] **Tables 5A to 5D: Summary of c DNA microarray expression level ratios (Cirrh. vs NL).**

Table 5A

Gene	Median log <sub>2</sub>	Median-fol d induction	Cirrh. microarray hybridizations (No)	Detected (%)
PI4K2	-0.23	0.85	8	88
ZNF216	NA	NA	8	0
AKR1C1	-0.72	0.61	16	50
dUT	0.40	1.32	8	13
PACE4	0.68	1.60	8	13
BIGH3	1.04	2.05	8	38
PRKAR1A	0.80	1.74	16	13
s.t. Ocia	0.12	1.09	16	6
SDCCAG28	0.35	1.28	8	25
PRDX1	1.38	2.60	16	44
TMP21	NA	NA	16	0
IQGAP2	0.51	1.42	8	50
Rab2	0.88	1.84	8	25
ARF1	1.24	2.36	8	25
HSPC1	-2.55	0.17	16	19
TLR5	1.08	2.12	8	38
GAP-SH3	1.60	3.04	8	25
Crisp-3	1.06	2.09	8	25
TM4SF4	1.23	2.35	16	25
AQP9	0.80	1.74	24	33
LOC51716	-0.56	0.68	32	66
Cystatin	3.15	8.88	8	25
Ki	1.01	2.01	8	25

[212]

Table 5B

Gene	Median log <sub>2</sub>	Median-fol d	Cirrh. microarray	Detected (%)
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		induction	hybridizations (No)		
Porimin	1.13	2.19	16		6
PTPRZ1	1.21	2.32	24		8
Rab9 effector p40	NA	NA	8		0
RBap48	2.46	5.50	8		13
PABPC1	3.47	11.06	8		13
NF1/B2	1.33	2.51	16		44
RPL7	0.98	1.97	40		5
HNRPDL	-0.33	0.80	40		8
OBCL6	NA	NA	8		0
SNRPG	0.17	1.12	16		13
KREV-1	1.64	3.12	8		38
DRB5	0.32	1.25	8		63
PKCI-1	0.71	1.64	8		75
IMPACT	1.68	3.21	8		25
BMI	2.68	6.41	16		19
G3BP	1.60	3.03	8		13
RHEB2	1.04	2.06	8		13
MARCKS	1.77	3.40	16		25
ALURBP	-1.13	0.46	8		13
PPGB	1.66	3.16	8		50
GRB2	2.62	6.14	8		25
TRAP1	3.06	8.33	16		13
PDHB	1.43	2.69	8		38

[213]

[214]

Table 5C

Gene	Median log <sub>2</sub>	Median-fol d induction	Cirrh. microarray hybridizati ons (No)	Detected (%)
DAD-1	1.61	3.05	16	31
PSME2	0.98	1.97	8	38
QP-C	2.87	7.31	8	63
MTRPS33	NA	NA	16	0
ARF4	3.98	15.74	8	13
DDB1	4.11	17.30	8	13
GNG10	1.81	3.51	16	50
DP1	1.33	2.51	16	13
ATP1B1	2.33	5.02	16	19
SLC25A3	0.99	1.99	16	25
SNC6	1.11	2.16	8	50
OMG	1.95	3.87	8	25
PB1S	0.98	1.98	8	38
RPS21	1.16	2.24	32	47
MMP-2	1.00	2.00	8	38
YWHAZ	1.48	2.79	8	75
PPP3R1	1.40	2.64	16	31
CTNNA1	-0.46	0.73	32	22
ADCYAP1	NA	NA	8	0
syntenin	1.26	2.40	8	75
topoisomeras e IIb	-0.10	0.93	8	13
UMP-CMPK	1.51	2.85	24	8
PSMD4	-1.63	0.32	16	13
hu_BTF3	1.73	3.33	8	63
rhoA	1.49	2.81	8	50

Table 5D

Gene	Median log <sub>2</sub>	Median-fold induction	Cirrh.micr oarray hy-bridization s (No)	Detected (%)
LDH-B	0.91	1.89	16	75
TBXA2-R	1.05	2.07	16	31
hu_CAP	1.63	3.10	8	25
hu_PP2a-cat	2.13	4.38	56	7
SDHC	NA	NA	16	0
hu_GDP-di2	1.44	2.71	8	50
CCNI	1.12	2.18	8	50
Mac25	1.09	2.13	8	25
TBP	0.76	1.69	24	4
FDX1	1.33	2.52	8	25
NLVCF	1.30	2.47	16	13
GNG3	-0.38	0.77	8	25
RCN2	1.35	2.56	16	6
hu_adk2	1.59	3.00	8	13
hu_Dcsa19	1.29	2.45	8	88
c/EBP	0.25	1.19	24	13
Rab GG	0.56	1.48	8	38
**c-syn	1.62	3.08	16	13
PPP1R15A	0.86	1.81	8	38
SCL5A6	3.95	15.45	8	25

[216]

[217] [(\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products]

[218]

[219] The quantitative assessment of gene expression (SEQ IDs: 102; 99; 101; 106; 98; 96) by RT-PCR (Q-PCR) in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh) samples is compared to expression pattern in

normal liver (NL), shown in Table 6 (median of  $\log_2$  values). Median represents 50<sup>th</sup> percentile of values for each sequence per group (HCC, FNH and Cirrh). Number of the samples profiled (SDCCAG28, BIGH3, s.t.OCIA, Rab2 and PACE4) represent 18 HCC, 3 FNH/Cirrh./NL; and for AKR1C1 7 HCC and 4 NL. Percentage of valid/detectable signals for SEQ IDs 102; 99; 101; 106; 98; 96 (% detected) is equal to 100%, with exception of PACE4 (\*) for which 94.45% HCC cases are detected.

[220]

[221] **Table 6: Summary of differential gene expression levels (SEQ IDs: 102; 99; 101; 106; 98; 96) verified by RT-PCR**

**Table 6**

Tissue	SDCCAG 28	BIGH3	s.t.OCIA	Rab2	PACE4	AKR1C 1
HCC	0.75	1.54	1.6	2.25	0.5*	3.20
FNH	1.29	2.4	2.23	2.63	1.51	NA
Cirrh.	-0.28	0.51	0.83	1.27	1.89	NA
NL	-1.34	0	0.53	0.22	0	0.93

[222]

[223] The quantitative assessment of gene expression of TMF4SF4 and DAD-1 in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh.) samples is compared to expression pattern in normal liver (NL), shown in Tables 7A/7B respectively (median of  $\log_2$  values). Median represents 50<sup>th</sup> percentile of values for each sequence (SEQ ID 112 and SEQ ID 140) per group (HCC, FNH and Cirrh.). Median-fold induction is calculated according to following formula: "2<sup>x</sup>" ("x" represents median of  $\log_2$  values). Number of the samples profiled (TM4SF4 and DAD-1 genes) represent 18 HCC, 3 FNH/Cirrh./NL.

[224]

[225] **Table 7A/7B: Summary of differential gene expression levels (SEQ ID 112 and SEQ ID 140) verified by RT-PCR.**

[226] 6

**Table 7A**

TM4SF4	Median $\log_2$	Median-fold induction	Number of cases profiled
HCC	2.83	7.11	18
FNH	3.81	14.07	3
Cirrh.	2.66	6.30	3

NL		0		1		3
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[227]

**Table 7B**

DAD-1	Median log	Median-fold induction		Number of cases profiled	
	<sup>2</sup>				
HCC	0.62		1.54		18
FNH	1.21		2.31		3
Cirrh.	0.14		1.10		3
NL	0.20		1.15		3

[228]

[229]

In another preferred embodiment of the invention the nucleic acid according to the invention can be used for the construction of antisense oligonucleotides (Zheng and Kemeny, 1995, Clin. Exp. Immunol., 100: 380-382) and/or ribozymes (Vaish et al., 1998, Nucleic Acids Res., 26: 5237-5242; Persidis, 1997, Nat. Biotechnol., 15: 921-922) and/or small interfering double stranded RNAs (Elbashir et al., 2001, Nature, 411: 494-498; Brummelkamp et al., 2002, Science, 296:550-553). In further preferred embodiments of the invention, the stability of the nucleic acid according to the invention can be decreased and/or the translation of the nucleic acid according to the invention inhibited by using RNA interference molecules (oligonucleotides). Thus, for example, the expression of the corresponding genes in cells can be decreased both *in vivo* and *in vitro*. Oligonucleotides can therefore be suitable as therapeutics. This strategy is also suitable, for example, for liver cells, in particular if the antisense oligonucleotides are complexed with liposomes. For use as a probe or as an "antisense" oligonucleotide, a single-stranded DNA or RNA is preferred. Small interfering RNA (siRNA) double stranded oligonucleotides can also be suitable as therapeutics. With this approach a short sequence or sequences of 15 to 22 nucleotides including sequence complementary to the sequence to be therapeutically targeted are exposed to the diseased tissue and serve to dramatically reduce or "knock down" the level of expression of the therapeutic target RNA sequence. siRNA therapeutic approaches in other diseases have been recently reported and are also applicable to liver disorders, liver cancers and other epithelial cancers (Filleur S. et al., Cancer Res., 2003; 63(14): 39-22).

[230]

In a preferred embodiment a nucleic acid according to the invention has been prepared by recombinant methods, by screening a library or isolation from a sample obtained from a patient or a subject. In another preferred embodiment of the invention

the nucleic acid according to the invention has been prepared synthetically. Thus, the nucleic acid according to the invention can be synthesized, for example, chemically with the aid of the DNA sequences described in SEQ ID 94 to SEQ ID 186 and/or with the aid of the protein sequences described in SEQ ID 1 to SEQ ID 93 with reference to the genetic code, e.g. according to the phosphotriester method (see, for example, Uhlmann and Peyman, 1990, Chemical Reviews, 90:543-584).

- [231] In another preferred embodiment, the invention relates to a nucleic acid according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, which has been modified by attachment of chemical moieties to the nucleic acid to stabilize it against degradation, so that a high concentration of the nucleic acid is maintained in the cell over a long period (Beigelman et al., 1995, Nucleic Acids Res., 23: 3989-94; Dudycz, 1995, WO 95/11910; Macadam et al., 1998, WO 98/37240; Reese et al., 1997, WO 97/29116). Typically, such stabilization can be obtained by the introduction of one or more internucleotide phosphorus groups or by the introduction of one or more non-phosphorus internucleotides.
- [232] Preferred suitable modified internucleotides are summarized in Uhlmann and Peymann (1990 Chem. Rev. 90, 544; see also Beigelman et al., 1995 Nucleic Acids Res., 23: 3989-94; Dudycz, 1995, WO 95/11910; Macadam et al., 1998, WO 98/37240; Reese et al., 1997, WO 97/29116).
- [233] In a further embodiment the invention relates to a vector comprising a nucleic acid according to the invention and/or a variant thereof, or a nucleic acid which is a non-functional mutant variant of the nucleic acid, or a nucleic acid having a sequence complementary to one the aforementioned nucleic acids. Preferably the vector is a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, an expression vector and/or a vector applicable in gene therapy. The preparation of such constructs is generally known to the person skilled in the art.
- [234] An "expression vector" within the meaning of the present invention preferably comprises at least one promoter or enhancer, i.e. at least one regulatory element comprising at least one translation initiation signal, at least one of the nucleic acids according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, one translation termination signal, a transcription termination signal, and a polyadenylation signal for the expression in eukaryotes.
- [235] For the expression of the gene concerned, in general a double-stranded DNA is preferred, the DNA region coding for the polypeptide being particularly preferred. In the case of eukaryotes this region begins with the first start codon (ATG) lying in a Kozak sequence (Kozak, 1987, Nucleic. Acids Res., 15: 8125-48) up to the next stop

codon (TAG, TGA or TAA), which lies in the same reading frame to the ATG. In the case of prokaryotes this region begins with the first AUG (or GUG) after a Shine-Dalgarno sequence and ends with the next stop codon (TAA, TAG or TGA), which lies in the same reading frame to the ATG.

- [236] Differentially expressed genes in HCC can contain liver or liver cancer gene-specific regulatory sequences. These non-transcribed sequences, found in the tissue- or disease-specific gene may be used to drive tissue- or disease-specific expression of included therapeutic and/or tumor cell-cytotoxic genes. These regulatory sequences may be used for liver cancer specific expression of a nucleic acid according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids. The screening and construction of such regulatory sequences is generally known to the person skilled in the art.
- [237] Suitable expression vectors can be prokaryotic or eukaryotic expression vectors. Examples of prokaryotic expression vectors are, for expression in *E. coli*, e.g. the vectors pGEM or pUC derivatives, examples of eukaryotic expression vectors are for expression in *Saccharomyces cerevisiae*, e.g. the vectors p426Met25 or p426GAL1 (Mumberg et al., 1994, Nucl. Acids Res., 22, 5767-5768), for expression in insect cells, e.g. *Baculovirus* vectors such as disclosed in EP-B1-0 127 839, and for expression in mammalian cells, e.g. the vectors Rc/CMV and Rc/RSV or SV40 vectors, which are all generally obtainable. Specific vectors for production of RNA interference following transfection, such as the pSUPER vector (Brummelkamp et al., 2002, Science, 296:550-553) are also included.
- [238] In general, the expression vectors also contain promoters suitable for the respective cell, such as, for example, the trp promoter for expression in *E. coli* (see, for example, EP-B1-0 154 133), the MET 25, GAL 1 or ADH2 promoter for expression in yeast (Russel et al., 1983, J. Biol. Chem., 258, 2674-2682; Mumberg, supra), the Baculovirus polyhedrin promoter, for expression in insect cells (see, for example, EP-B1-0 127 839). For expression in mammalian cells, for example, suitable promoters are those which allow a constitutive, regulatable, tissue-specific, cell-cycle-specific or metabolically specific expression in eukaryotic cells. Regulatory elements according to the present invention preferably are promoters, activator sequences, enhancers, silencers and/or repressor sequences.
- [239] Examples of suitable regulatory elements which make possible constitutive expression in eukaryotes preferably are promoters which are recognized by the RNA polymerase III or viral promoters, CMV enhancer, CMV promoter, SV40 promoter or LTR promoters, e.g. from MMTV (mouse mammary tumor virus; Lee et al., 1981, Nature, 214, 228-232) and further viral promoter and activator sequences, derived

- from, for example, adeno- and adeno-like viruses, HBV, HCV, HSV, HPV, EBV, HTLV or HIV.
- [240] Examples of regulatory elements which make possible regulated expression in eukaryotes are the tetracycline operator in combination with a corresponding repressor (Gossen et al., 1994, *Curr. Opin. Biotechnol.*, 5:516-20).
- [241] Translation initiation signals, translation termination signals, transcription termination signals, and polyadenylation signals are generally known to the person skilled in the art and can be readily obtained from commercial laboratory suppliers.
- [242] Preferably, the expression of the genes relevant for liver disorders and/or epithelial cancer takes place under the control of tissue-specific promoters, for example, under the control of liver-specific promoters such as albumin, alpha fetoprotein, apolipoprotein AI, alpha-1 antitrypsin, and the complement C5 and C8A genes (Schrem et al., 2002, *Pharmacol. Rev.*, 54 129-58; Pontoglio et al., 2001, *J. Expt. Med.*, 194:1683-1689). The regulatory sequences associated with genes highly deregulated in HCC as described herein also provide a preferable method for specific gene expression in these disorders.
- [243] Further examples of regulatory elements which make tissue-specific expression in eukaryotes possible are promoters or activator sequences from promoters or enhancers of those genes which code for proteins which are only expressed in certain cell types.
- [244] Examples of regulatory elements which make possible metabolically specific expression in eukaryotes are promoters which are regulated by hypoxia, by oxidative stress, by glucose deficiency, by phosphate concentration or by heat shock.
- [245] Examples of regulatory elements which make cell cycle-specific expression in eukaryotes possible are promoters of the following genes: cdc25A, cdc25B, cdc25C, cyclin A, cyclin E, cdc2, E2F-1 to E2F-5, B-myb or DHFR (Zwicker J. and Müller R., 1997, *Trends Genet.*, 13:3-6). The use of cell cycle regulated promoters is particularly preferred in cases, in which expression of the polypeptides or nucleic acids according to the invention is to be restricted to proliferating cells.
- [246] In order to make possible the introduction of nucleic acids as described above, or a nucleic acid which is a non-functional mutant variant of the nucleic acid and thus the expression of the polypeptide in a eukaryotic or prokaryotic cell by transfection, transformation or infection, the nucleic acid can be present as a plasmid, as part of a viral or non-viral vector. Suitable viral vectors here are particularly: baculoviruses, vaccinia viruses, adenoviruses, adeno-associated viruses, retroviruses and herpesviruses. Suitable non-viral vectors here are particularly: virosomes, liposomes, cationic lipids, or polylysine-conjugated DNA or naked DNA.
- [247] Plasmids, shuttle vectors, phagemids, and cosmids suitable for use according to the invention are also known to the person skilled in the art and are generally obtainable

from commercial laboratory suppliers.

- [248] Examples of vectors applicable in gene therapy are virus vectors, for example adenovirus vectors, retroviral vectors or vectors based on replicons of RNA viruses (Lindemann et al., 1997, Mol. Med. 3: 466-476; Springer et al., 1998, Mol. Cell. 2:549-558). Eukaryotic expression vectors are suitable in isolated form for gene therapy use, as naked DNA can penetrate, for example, into liver cells upon local application or via the blood supply.
- [249] Compared to the state of the art, this fusion construct surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders, and/or other epithelial cancers.
- [250] In another aspect the invention furthermore relates to a cell comprising a nucleic acid according to the invention and/or a variant thereof. Preferably the cell is transformed with a vector according to the invention. The cell preferably contains a nucleic acid wherein the nucleic acid is either a non-functional mutant variant of a nucleic acid according to the invention. In particular the cell contains a vector comprising a nucleic acid wherein the nucleic acid is a non-functional mutant variant of a nucleic acid according to the invention. Preferably the cell contains a nucleic acid having a sequence complementary to a nucleic acid according to the invention, or a variant thereof. Moreover the cell preferably contains a vector comprising a nucleic acid coding for an antibody according to the invention or a fragment of the antibody. The cell according to the invention may for example be a liver cell, comprising at least one of the aforementioned nucleic acids or a cell which is transformed using one of the above described vectors. Cells can be either prokaryotic or eukaryotic cells, heterologous or autologous cells. Examples of prokaryotic cells are *E. coli* and examples of eukaryotic cells include primary hepatocytes cells, hepatocytes cell lines such as HepG2 and Hep3B cells, yeast cells, for example *Saccharomyces cerevisiae* or insect cells.
- [251] Compared to the state of the art, the cell according to the invention surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancers.
- [252] In a preferred embodiment of the invention the cell is a transgenic embryonic non-human stem cell which comprises at least one nucleic acid according to the invention, at least one vector, at least one knock-out gene construct and/or at least one expression vector as described above.
- [253] Processes for the transformation of cells and/or stem cells are well known to a person skilled in the art and include, for example, electroporation or microinjection.

- [254] In another aspect the invention relates to the provision of a transgenic non-human mammal comprising a compound selected from the group consisting of a nucleic acid according to the invention and/or a variant thereof, a nucleic acid which is a non-functional mutant variant the nucleic acid, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, one of the aforementioned nucleic acids in the form of a vector, of a knock-down or knock-out gene construct, and of an expression vector.
- [255] Transgenic animals in general show a tissue-specifically increased expression of the nucleic acids and/or polypeptides and can be used for the analysis of liver disorders and/or epithelial cancers, such as for example HCC, and for development and evaluation of therapeutic strategies for such disorders. Transgenic animals may further be employed in the production of polypeptides according to the invention. The polypeptide produced by the animal may for example be enriched in a body fluid of the animal. The polypeptides according to the invention may for example be isolatable from a body fluid such as the milk.
- [256] Compared to the state of the art, this transgenic non-human mammal surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive analysis and/or diagnosis of liver disorders and/or other epithelial cancers.
- [257] Processes for the preparation of transgenic animals, in particular of transgenic mice, are likewise known to the person skilled in the art from e.g., US 5,625,122; US 5,698,765; US 5,583,278 and US 5,750,825 and include transgenic animals which can be produced, for example, by means of direct injection of expression vectors according to the invention into embryos or spermatocytes or by injection of the expression vectors into the pronucleus of the fertilized ovum or by means of the transfection of expression vectors into embryonic stem cells or by nuclear transfer into appropriate recipient cells (Polites and Pinkert, DNA Microinjection and Transgenic Animal Production, page 15 to 68 in Pinkert, 1994, Transgenic animal technology: a laboratory handbook, Academic Press, London, UK; Houdebine, 1997, Harwood Academic Publishers, Amsterdam, The Netherlands; Doetschman, Gene Transfer in Embryonic Stem Cells, page 115 to 146 in Pinkert, 1994, supra; Wood, Retrovirus-Mediated Gene Transfer, page 147 to 176 in Pinkert, 1994, supra; Monastersky, Gene Transfer Technology; Alternative Techniques and Applications, page 177 to 220 in Pinkert, 1994, supra).
- [258] If the above described nucleic acids are integrated into so-called "targeting vectors" or "knock-out" gene constructs (Pinkert, 1994, supra), it is possible after transfection of embryonic stem cells and homologous recombination, for example, to generate knock-out mice which, in general, as heterozygous mice, show decreased expression of the nucleic acid, while homozygous mice no longer exhibit expression of the nucleic acid.

The animals thus produced can also be used for the analysis of liver disorders, such as for example HCC, and/or epithelial cancers.

- [259] Knock-out gene constructs are known to the person skilled in the art, for example, from the US patents 5,625,122; US 5,698,765; US 5,583,278 and US 5,750,825.
- [260] In a further aspect the invention relates to an antibody or a fragment, wherein the antibody or antibody fragment is directed against a polypeptide according to the invention, a functional variant thereof or against a nucleic acid coding for the polypeptide, or a variant thereof.
- [261] Compared to the state of the art, these antibody or a fragment thereof surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancers.
- [262] The term "antibody" or "antibody fragment" is understood according to the present invention as also meaning antibodies or antigen-binding parts thereof prepared by genetic engineering and optionally modified, such as, for example, chimeric antibodies, humanized antibodies, multifunctional antibodies, bi- or oligospecific antibodies, single-stranded antibodies, F(ab) or F(ab)<sub>2</sub> fragments (see, for example, EP-B1-0 368 684, US 4,816,567; WO 98/24884). The antibodies according to the invention can for example be used for diagnosis, prevention and/or treatment of disorders according to the invention such as liver disorders, for example HCC, and/or epithelial cancers.
- [263] The invention further relates to a method for producing an antibody or antibody fragment, preferably a polyclonal or monoclonal antibody, specific for the polypeptides or functional variants thereof encoded by the nucleic acids according to the invention, or variants thereof for example for the diagnosis and/or prevention and/or treatment of disorders according to the invention. The process is carried out according to methods generally known to the person skilled in the art by immunizing a mammal, for example a rabbit, with a nucleic acid according to the invention or their variants thereof, or with a polypeptide according to the invention or parts thereof or functional variants thereof, having at least 6 amino acid length, preferably having at least 8 amino acid length, in particular having at least 12 amino acid length, if appropriate in the presence of, for example, Freund's adjuvant and/or aluminum hydroxide gels (see, for example, Harlow and Lane, 1998, *Using Antibodies: A Laboratory Manual*, Cold Spring Harbor Press, New York, USA, Chapter 5, pp. 53-135). The polyclonal antibodies formed in the animal as a result of an immunological reaction can then be easily isolated from the blood according to generally known methods and purified, for example, by means of column chromatography. Monoclonal antibodies can be produced, for example, according to the known method

of Winter & Milstein (Winter and Milstein, 1991, *Nature*, 349:293-299).

- [264] The present invention further relates to an antibody or antibody fragments directed against a polypeptide described above and reacts specifically with the polypeptides described above, where the above-mentioned parts of the polypeptide are either immunogenic themselves or can be rendered immunogenic by coupling to suitable carriers, such as, for example, bovine serum albumin or keyhole limpet hemocyanin to increase in their immunogenicity. This antibody is either polyclonal or monoclonal; preferably it is a monoclonal antibody.
- [265] Still further, the present invention relates to the generation and/or production of an antibody or antibody fragment specific for the polypeptide according to the invention from a recombinant antibody expression library, such as for example described by Knappik et al. (2000, *J. Molec. Biol.*, 296:57-86).
- [266] In another embodiment of the invention, it is provided an array, wherein the array contains at least two compounds selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding the polypeptide, a non-functional mutant variant nucleic acid and an antibody or an antibody fragment directed against the polypeptide. Alternatively, the array may contain at least one component according to the invention in combination with previously described components implicated in neoplastic or metabolic liver disorders or epithelial cancers.
- [267] Within the meaning of the invention the term "array" refers to a solid-phase or gel-like carrier upon which at least two compounds are attached or bound in one-, two- or three-dimensional arrangement. Such arrays are generally known to the person skilled in the art and are typically generated on glass microscope slides, specially coated glass slides such as polycation-, nitrocellulose- or biotin- coated slides, cover slips, and membranes such as for example membranes based on nitrocellulose or nylon.
- [268] The aforementioned arrays include bound polypeptides according to the invention or functional variants thereof or nucleic acids coding for the polypeptides, or variants thereof, fusion proteins according to the invention or antibodies or antibody fragments directed against polypeptides according to the invention or functional variants thereof or cells expressing polypeptides according to the invention or functional variants thereof or at least two cells expressing at least one nucleic acid according to the invention, or variants thereof. Nucleic acids coding for these, or variants thereof can also be part of an array. Such arrays can be employed for analysis and/or diagnosis of liver disorders, preferably of HCC, and/or epithelial cancer.
- [269] The invention further relates to a method of producing arrays according to the invention, wherein at least two compounds according to the invention are bound to a carrier material.

- [270] Methods of producing such arrays, for example based on solid-phase chemistry and photo-labile protective groups are generally known (US 5,744,305). Such arrays can also brought into contact with substances or a substance libraries and tested for interaction, for example for binding or change of conformation.
- [271] The invention further relates to a process for preparing an array immobilized on a support material for analysis and/or diagnosis of disorders according to the invention such as a liver disorder, preferably of HCC, in which at least two nucleic acids, at least two polypeptides or at least two antibodies or antibody fragments, and/or at least two cells, or at least one of the aforementioned components in combination with other components relevant to neoplastic and metabolic liver disorders or epithelial cancers, as described above, is used for preparation. The arrays produced by such process can be employed for the diagnosis of disorders according to the invention.
- [272] In another aspect the invention relates to a diagnostic comprising at least one compound selected from the group consisting of a polypeptide according to the SEQ ID 1 to SEQ ID 93 or functional variants thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody or an antibody fragment directed against one of the aforementioned polypeptides, combined or together with suitable additives or auxiliaries.
- [273] In a preferred embodiment the invention relates to a diagnostic comprising a polypeptide according to the SEQ ID 1 or a functional variant thereof, a nucleic acid encoding the aforementioned polypeptide, a variant of the aforementioned nucleic acid, and an antibody or an antibody fragment directed against the aforementioned polypeptide, combined or together with suitable additives or auxiliaries.
- [274] In a further aspect the invention relates to a diagnostic comprising at least one compound selected from the group consisting of a nucleic acid according to the SEQ ID 94 to SEQ ID 186 or variants thereof, combined with suitable additives or auxiliaries.
- [275] In a preferred embodiment the invention relates to a diagnostic comprising a nucleic acid according to the SEQ ID 94 or a variant thereof, combined with suitable additives or auxiliaries
- [276] Compared to the state of the art, this diagnostic surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of liver disorders and/or other epithelial cancers.
- [277] Within the meaning of the invention "suitable additives" or "auxiliaries" are generally known to the person skilled in the art and comprise, for example, physiological saline solution, demineralized water, gelatin or glycerol-based protein stabilizing reagents. Alternatively, the nucleic acid or polypeptide according to the invention may be lyophilized for stabilization.

- [278] In another example a diagnostic kit based on the nucleic acid sequences according to the invention could be generated. Such a kit may be designed specifically to detect cells altered as a result of the described disorders resident in the circulatory system and thereby detectable in serum from test patients. Additional examples of diagnostic kits includes enzyme linked immunosorbent assays (ELISA), radioimmunoassays (RIA), and detection of an immune reaction or specific antibodies to the polypeptides according to the invention including detection of specific responding immune cells.
- [279] In a preferred embodiment the diagnostic according to the invention contains a probe, preferentially a DNA probe.
- [280] For example, it is possible according to the present invention to prepare a diagnostic based on the polymerase chain reaction (PCR). Under defined conditions, preferably using primers specific for a nucleic acid according to the invention as a DNA probe PCRs specific for the nucleic acid sequences of the invention will be utilized to monitor both the presence, and especially the amount, of specific nucleic acids according to the invention in a sample isolated from a patient obtained for diagnostic or therapeutic purposes. This opens up a further possibility of obtaining the described nucleic acids, for example by isolation from a suitable gene or cDNA library, for example from a liver disorder-specific or liver specific gene bank, with the aid of a suitable probe (see, for example, J. Sambrook et al., 1989, Molecular Cloning. A Laboratory Manual 2nd edn. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY Chapter 8 pages 8.1 to 8.81, Chapter 9 pages 9.47 to 9.58 and Chapter 10 pages 10.1 to 10.67).
- [281] Suitable probes are, for example, DNA or RNA fragments having a length of about 50-1000 nucleotides, preferably having a length of about 10 to about 100 nucleotides, preferably about 100 to about 200 nucleotides, in particular having a length of about 200-500 nucleotides, whose sequence can be derived from the polypeptides according to SEQ ID 1 to SEQ ID 93, and functional variants thereof, and nucleic acids coding for the polypeptides, preferably according to SEQ ID 94 to SEQ ID 186, and variants thereof.
- [282] Alternatively, it is preferably possible with the aid of the derived nucleic acid sequences to synthesize oligonucleotides that are suitable as primers for a polymerase chain reaction. Using this, the nucleic acid described above or parts of this can be amplified and isolated from cDNA, for example HCC-specific cDNA. Suitable primers are, for example, DNA fragments having a length of about 10 to 100 nucleotides, preferably having a length of about 15 to 50 nucleotides, in particular having a length of 17 to 30 nucleotides, whose sequence can be derived from the polypeptides according to SEQ ID 1 to SEQ ID 93 from the nucleic acids according to SEQ ID 94 to SEQ ID 186. The design and synthesis of such primers is generally known to the

person skilled in the art. The primers may additionally contain restriction sites, e.g. suitable for integration of the amplified sequence into vectors, or other adapters or overhang sequences, e.g. having a marker molecule such as a fluorescent marker attached, generally known to the skilled worker.

- [283] In another aspect of the invention it is provided a method of diagnosis of a disorder according to the invention, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, functional variants thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody directed against one of the aforementioned polypeptides or antibody fragment thereof, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.
- [284] In a preferred embodiment of the method the disorder of the liver is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.
- [285] In a preferred embodiment of the method the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [286] Compared to the state of the art, this diagnostic surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.
- [287] Preferably the sample is isolated from a patient by non-invasive methods as described above.
- [288] For example, serum detection of specific deregulated gene proteins via ELISA assay is one application, alternatively one or a panel of antibodies to deregulated gene products may be used, from which a diagnostic score is deduced based on the combinations of, and the expression levels of gene products expressed in the diseased tissue or in serum from diseased individuals.
- [289] A preferred diagnostic according to the invention contains the described polypeptide or the immunogenic parts thereof described in greater detail above. The polypeptide or the parts thereof, which are preferably bound to a solid phase, e.g. of nitrocellulose or nylon, can be brought into contact *in vitro*, for example, with the body fluid to be investigated, e.g. blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, in order thus to be able to react, for example, with autoimmune antibodies present in e.g. the blood of the patient. The antibody-peptide complex can then be detected, for example, with the aid of labeled antihuman IgG antibodies. The labeling involves, for example, an enzyme, such as peroxidase,

which catalyses a color or chemiluminescent reaction. The presence and the amount of autoimmune antibody present can thus be detected easily and rapidly by means of the color.

- [290] In addition the diagnostic may be directed to detecting an endogenous antibody or fragment thereof present in the sample isolated from a patient which antibody or fragment thereof is directed against a polypeptide according to the invention. Detection of such autoimmune antibodies may be accomplished by methods generally known to the skilled artisan, e.g. by immunoaffinity assays using polypeptides according to the invention or functional variants thereof or parts thereof as a probe. Preferably the presence of such autoimmune antibodies is indicative of the patient suffering from a disorder according to the invention.
- [291] A further diagnostic, that is subject matter of the present invention, contains the antibodies according to the invention themselves. With the aid of these antibodies, it is possible, for example, to easily and rapidly investigate a tissue sample as to whether the concerned polypeptide according to the invention is present in an increased amount in order to thereby obtain an indication of possible disease including liver disorders, for example HCC. In this case, the antibodies according to the invention are preferably labeled directly, or more commonly for example these are detected with a specific secondary antibody indirectly, such as with an enzyme or fluorescent molecule, as already described above. The specific antibody-peptide complex can thereby be detected easily and rapidly, e.g., by means of an enzymatic color reaction.
- [292] In still another aspect of the invention it is provided a method for identifying at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [293] Compared to the state of the art the method surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive identification of differentially expressed nucleic acids according to the invention that provides a useful basis for diagnosing a disorder according to the invention.
- [294] Preferably at least 2, at least 3, at least 4 at least 5, at least 6, or at least 7 nucleic acids are identified.
- [295] In another preferred embodiment of the method said nucleic acid(s) is (are) detected

- by PCR based detection or by a hybridization assay.
- [296] In another preferred embodiment of the method the expression of said nucleic acid is compared by a method selected from the group consisting of solid-phase based screening methods, hybridization, subtractive hybridization, differential display, and RNase protection assay.
- [297] In a further preferred embodiment of the method the sample isolated from the patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [298] Preferably the reference sample is isolated from a source selected from a non-diseased sample of the same patient or a non-diseased sample from another subject. The selection of appropriate reference samples is generally known to the person skilled in the art. In particular the reference sample may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [299] In another preferred embodiment of the method, the reference library is an expression library or a data base comprising clones or data on non-diseased expression of at least one nucleic acid according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [300] In another aspect of the invention it is provided a method of diagnosing a liver disorder, or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid which is differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said nucleic acid(s) identified in step (c) with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched nucleic acid(s) is (are) indicative of the patient suffering from a liver disorder or an epithelial cancer.
- [301] Compared to the state of the art, this method of diagnosing surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.
- [302] In another preferred embodiment of the method of diagnosis, the pathologic reference sample is isolated from a diseased sample from another patient. The latter patient having been diagnosed as suffering from the disorder according to the invention

which is to be diagnosed. The selection of appropriate pathologic reference samples is generally known to the person skilled in the art. In particular the pathologic reference sample may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

- [303] In another preferred embodiment of the method of diagnosis, the pathologic reference library is a data base comprising data on differential expression of the at least one nucleic acid according to the invention in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The pathologic reference library preferably also relates to a differential expression library comprising nucleic acids according to the invention which are differentially expressed in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The selection of an appropriate pathologic reference library is generally known to the person skilled in the art.
- [304] Preferably the liver disorder is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [305] Within the meaning of the invention the term "detecting a nucleic acid" refers to a method that preferably uncovers, visualizes, separates or allows recognition of the nucleic acid according to the invention from the background of the other components present in the sample. Such methods are generally known to the person skilled in the art and include *in situ* hybridization, PCR amplification, gel electrophoresis, northern blots, solid phase array (gene chips) based methods, nuclease protection methods (as described and referenced in Alberts, et al. 2002, *The Molecular Biology of the Cell*, 4<sup>th</sup> ed. Garland, New York, USA).
- [306] Within the meaning of the invention the term "comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample" refers to a comparison of the expression of the two groups of said nucleic acid(s) on a quantitative or qualitative level by means of an experimental procedure such as differential display, subtractive hybridization, RNase protection assay, or especially DNA chip hybridization. Moreover a comparison of experimental data on said nucleic acid(s) detected in step (a) with the

expression of the same nucleic acid(s) in a reference library as defined above is also included herein.

- [307] The term "identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample" within the meaning of the present invention is understood to mean selecting said nucleic acid(s) which is (are) differentially expressed compared to the reference library or the reference samples which fulfills the following criteria: the level of differential expression of the detected said nucleic acid(s) compared to the reference library or the reference samples is greater than about 2 fold, preferably greater than about 5 fold, more preferred greater than about 10 fold upregulated.
- [308] The term "matching said nucleic acid(s) identified in step (c) with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library " within the meaning of the invention is understood to mean that said nucleic acid(s) identified in step (c) is (are) compared with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library. Then said nucleic acid(s) identified in step (c) that is (are) also differentially expressed in the pathologic reference sample or pathologic reference library is (are) matched, i.e. said identical pair is identified and allocated. Since the differential expression of said nucleic acid(s) in the pathologic reference sample or pathologic reference library is (are) indicative of a disorder according to the invention, such correspondence with the differential expression in the sample then indicates that the patient suffers from that disorder.
- [309] Preferably the sample is isolated from a patient by non-invasive or preferably minimally invasive methods such as described above, including venupuncture.
- [310] The methods of diagnosing according to the invention allows early detection of a liver disorder and/or an epithelial cancer, and/or non-invasive diagnosis of the disorder, based on an essentially concordant expression pattern of the nucleic acids according to the invention detected in the samples isolated from an animal and/or a human patient suffering from a liver disorder and/or an epithelial cancer relative to a reference sample or relative to a reference library. The method has the additional advantage that it also provides additional and novel diagnostic parameters to characterize different subtypes of liver disorders, such as for example subtypes of HCC.
- [311] The term "essentially concordant expression pattern" of the nucleic acids according to the invention refers to a pattern of expression that is essentially reproducible from patient to patient or subject to subject, provided that the patients or subjects compared are in the same or comparable pathological condition or healthy condition, respectively.

- [312] In still another aspect of the invention it is provided a method for identifying at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [313] Compared to the state of the art, this method surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive identification of differentially expressed polypeptides according to the invention that provides a useful basis for diagnosing a disorder according to the invention.
- [314] Preferably at least 2, at least 3, at least 4, at least 5, at least 6, or at least 7 polypeptides are identified.
- [315] Preferably the sample is isolated from a patient by non-invasive or minimally invasive methods such as described above, including venupuncture.
- [316] In another embodiment of the method the sample is a sample as defined further above. Preferably the reference sample is a reference sample as defined above.
- [317] In another preferred embodiment of the method, the reference library is an expression library or a data base comprising clones or data on non-diseased expression of the at least one polypeptide according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, or feces. Such databases are generated as a result of the cDNA microarray expression analysis according to the invention and are known to persons skilled in the art. Further reference libraries useable according to the invention have been described above.
- [318] In another aspect of the invention it is provided a method of diagnosing a liver disorder or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the

matched polypeptide(s) is (are) indicative of the patient suffering from a liver disorder or an epithelial cancer.

- [319] Compared to the state of the art, this method of diagnosing surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.
- [320] Preferably at least 2, at least 3, at least 4, at least 5, at least 6, or at least 7 polypeptides are identified.
- [321] Within the meaning of the invention the term "detecting a polypeptide" refers to a method that preferably uncovers, visualizes, separates and/or allows recognition of the polypeptide according to the invention from the background of the other components present in the sample. Such methods are generally known to the person skilled in the art and includes gel electrophoresis, chromatographic techniques, immunoblot analysis, immunohistochemistry, enzyme based immunoassay, mass spectroscopy, high pressure liquid chromatography, surface plasmon resonance, and/or antibody and protein arrays as described above (Ausubel, F.A. et al., eds., 1990, Current Protocols in Molecular Biology. Greene Publishing and Wiley-Interscience, New York, USA, Chapter 10; Myszka and Rich 2000, Pharm. Sci. Technol. Today 3:310-317). Preferably proteins and polypeptides are prepared from the sample by disruption of the cells with physical sheering or ultrasonic means, for example. Protein is denatured and stabilized with reducing agent treatment and heating and the protein is size fractionated on electrophoretic polyacrylamide gels.
- [322] Within the meaning of the invention the term "comparing the expression of said polypeptide(s) detected in step (a) with the expression of the same polypeptide(s) in a reference library or in a reference sample" refers to a comparison of the expression of the two groups of polypeptide(s) on a quantitative and/or qualitative level by means of an experimental procedure such as two dimensional gel electrophoresis, chromatographic separation techniques, immunoblot analysis, surface plasmon resonance, immunohistochemistry, and enzyme based immunoassay. In two dimensional gel electrophoresis, all peptides are first resolved according to isoelectric point in the first electrophoretic dimension and then by size according to methods well known to persons experienced in the art. Moreover a comparison of experimental data on the at least one polypeptide detected in step 1 with the expression of the polypeptide in a reference library as defined above is also included herein.
- [323] The term "Identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample" within the meaning of the present invention is understood to mean selecting said polypeptide(s) which is (are) differentially expressed compared to the reference library or the reference samples which fulfills the following criteria: the level of dif-

ferential expression of the detected polypeptide(s) compared to the reference library or the reference samples is greater than about 2 fold, preferably greater than about 5 fold, more preferred greater than about 10 fold upregulated.

- [324] The term "matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library " within the meaning of the invention is understood to mean that said polypeptide(s) identified in step (c) is compared with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library. Then said polypeptide(s) identified in step (c) that is (are) also differentially expressed in the pathologic reference sample or pathologic reference library is (are) matched, i.e. said identical pair(s) is (are) identified and allocated. Since the differential expression of said polypeptide(s) in the pathologic reference sample or pathologic reference library is (are) indicative of a disorder according to the invention, such correspondence with the differential expression in the sample then indicates that the patient suffers from that disorder.
- [325] Preferably the sample is isolated from a patient by non-invasive or minimally invasive methods such as described above, including venupuncture.
- [326] In another embodiment of the method the sample is a sample as defined further above. Preferably the reference sample is a reference sample as defined above.
- [327] In another preferred embodiment of the method of diagnosis, the reference library is an expression library or a dataset comprising clones or data on non-diseased expression of the at least one polypeptide according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [328] An example of a data base according to the invention and further experimental reference libraries useable according to the invention have been described above.
- [329] In another preferred embodiment of the method of diagnosis, the pathologic reference sample is a pathologic reference sample as has been defined above.
- [330] In another preferred embodiment of the method of diagnosis, the pathologic reference library is a data base comprising data on differential expression of said polypeptide(s) according to the invention in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The pathologic reference library also relates to a differential expression library comprising polypeptides according to the invention which are differentially expressed in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the

invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The selection of an appropriate pathologic reference library is generally known to the person skilled in the art.

- [331] Preferably the liver disorder is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [332] The methods of diagnosing according to the invention allows early detection of a liver disorder and/or epithelial cancer, and/or non-invasive diagnosis of the disorder, based on an essentially concordant expression pattern of the polypeptides according to the invention detected in the samples isolated from an animal and/or a human patient suffering from a liver disorder and/or epithelial cancer relative to a reference sample or relative to a reference library. The method has the additional advantage that it also provides additional and novel diagnostic parameters to characterize different subtypes of liver disorders, such as for example subtypes of HCC.
- [333] The term "essentially concordant expression pattern" of the polypeptides according to the invention refers to a pattern of expression that is essentially reproducible from patient to patient or subject to subject, provided that the patients or subjects compared are in the same or comparable pathological condition or healthy condition, respectively.
- [334] In another aspect of the invention it is provided a pharmaceutical composition comprising at least one compound selected from the group consisting of a polypeptide according to SEQ ID 1 to 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for the aforementioned antibody, a cell comprising the vector comprising a nucleic acid coding for the aforementioned antibody, and a cell comprising the vector comprising a nucleic acid coding for the aforementioned antibody fragment, combined or together with suitable additives or auxiliaries. In a preferred embodiment the pharmaceutical composition contains at least one cell according to the invention, combined or mixed together with suitable additives or auxiliaries.

- [335] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the pharmaceutical composition according to the invention surprisingly provide an improved, sustained and/or more effective treatment.
- [336] A pharmaceutical composition in the sense of the invention encompasses medicaments which can be used for preventing and/or treating liver disorders and/or epithelial cancer. The pharmaceutical composition includes, for instance, a stabilized recombinant antibody that has been produced by expression of specific antibody gene fragments in a cellular system, preferably a eukaryotic system. A recombinant antibody therapeutic for instance, is delivered by injection into the diseased liver region or into the venous or arterial vascular systems or into the hepatic portal system. The injections can be repeated at regular intervals to achieve therapeutic efficacy. Therapeutics according this invention may also be employed in combinations with other chemical, antibody, or any other therapeutic application to improve efficacy.
- [337] An antibody or other specific-binding partner can be conjugated to a second molecule, such as a cytotoxic agent, and used for targeting the second molecule to a tissue-antigen positive cell (Vitetta E.S. et al, 1993, Immunotoxin therapy, in DeVita Jr. V.T. et al., eds, Cancer: Principles and Practice of Oncology, 4<sup>th</sup> ed., J.B. Lippincott Co., Philadelphia, 2624-2636). Examples of cytotoxic agents include, but are not limited to, antimetabolites, alkylating agents, anthracyclines, antibiotics, anti-mitotic agents, radioisotopes and chenotherapeutic agents. Techniques for conjugating therapeutic agents to antibodies are well known in prior art.
- [338] In addition to immunotherapy, polynucleotides and polypeptides can be used as targets for non-immunotherapeutic applications, e.g. using compounds which interfere with function, expression, assembly of the genes according to the invention, including but not limited to modulation(s) of the enzymatic active site(s) of the polypeptide(s), change of the protein(s) structure(s), interaction(s) via small molecules, etc.
- [339] The present invention also relates to a process producing a pharmaceutical composition for the treatment and/or prevention of disorders according to the invention, for example, HCC, in which at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the

vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, is combined or mixed together with suitable additives.

- [340] The present invention furthermore relates to a pharmaceutical composition produced by this process for the treatment and/or prevention of liver disorders and/or epithelial cancers, for example, HCC, which contains at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, if appropriate together with suitable additives and auxiliaries.
- [341] The invention furthermore relates to the use of this pharmaceutical composition for the prevention and/or treatment of liver disorders, for example, HCC and/or epithelial cancer.
- [342] Preferably the pharmaceutical composition is employed for the treatment of a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the pharmaceutical composition is employed for the treatment of an epithelial cancer that is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [343] Therapy can also be carried out in a conventional manner generally known to the person skilled in the art, e.g. by means of oral application or via intravenous injection of the pharmaceutical compositions according to the invention. It is thus possible to administer the pharmaceutical composition comprising the suitable additives or auxiliaries, such as, for example, physiological saline solution, demineralized water, stabilizers, proteinase inhibitors.
- [344] A therapy based on the use of cells, which express at least one polypeptide according to the invention, functional variants thereof or nucleic acids coding for the

polypeptide, or variants thereof can be achieved by using autologous or heterologous cells. Preferred cells comprise liver cells, for example primary cultures of liver cells, liver populating stem or progenitor cells, or blood cells. The cells can be applied to the tissue, preferably to the blood or injected into the liver, with suitable carrier material. Such therapy is preferably based on the notion that upon expression and/or release of a polypeptide according to the invention the polypeptide stimulates an immune response in the patient in need of the treatment.

- [345] Preferably the therapeutical approach is directed toward inhibiting the function and/or expression of at least one polypeptide according to the invention and/or the function and/or expression of at least one nucleic acid according to the invention. Such inhibition of the expression and/or function preferably reduces the expression and/or function of the targeted nucleic acid/polypeptide significantly, for example by 50%, in particular by 80% and most preferably by 95%. The inhibition of the expression and/or function preferably abolishes the expression and/or functioning of the targeted nucleic acid/polypeptide. The inhibition can occur at any level, including transcription, translation, and/or perdurance of the nucleic acid (e.g. degradation, stability) in the cell. For inhibiting the biological activity of polypeptides according to the invention e.g. antibodies and small molecules can be targeted to cell-surface, exposed, extracellular, ligand binding, functional, etc. domains of the polypeptide. The term "antagonist/inhibitor" in the sense of the present invention can be directed to, or targeted to any part of the nucleotide and polypeptide according to the invention.
- [346] Such reduction or abolished expression and/or functioning of the targeted nucleic acid/polypeptide can be determined using conventional assays for determining the expression and/or functioning of a nucleic acid/polypeptide generally known to the person skilled in the art. In particular such assays for determining the function comprise methods for comparing the biological activity of the targeted nucleic acid/polypeptide before and after administration of the pharmaceutical composition. Preferably such assays for determining the expression comprise methods for comparing the level of expression of the targeted nucleic acid/polypeptide before and after administration of the pharmaceutical composition.
- [347] Such therapy is preferably accomplished by the use of a nucleic acid having a sequence complementary to one of nucleic acids according to the invention, i.e. an antisense molecule or a RNA interference molecule which reduces or abolishes the translation of transcribed nucleic acids according to the invention and thereby inhibits the function and/or expression of the targeted nucleic acid/polypeptide.
- [348] In a preferred embodiment, the pharmaceutical composition comprises a nucleic acid having a complementary sequence which is an antisense molecule or an RNA interference molecule.

- [349] Preferably such nucleic acid having a complementary sequence may be employed in the form of a vector or a cell comprising such nucleic acid. On the polypeptide level the therapy may in particular be carried out by the use of an antibody or an antibody fragment directed against a polypeptide according to the invention. The antibody or antibody fragment may be administered directly to the patient or preferably the nucleic acid encoding the antibody is contained in a vector which is preferably contained in a cell. The cell or vector may then be administered to the patient in need of such treatment.
- [350] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the method of treating according to the invention surprisingly provide an improved, sustained and/or more effective treatment.
- [351] The invention further relates to a method of treating a patient suffering from of a liver disorder, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding the polypeptide, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the vector, an antibody directed against the polypeptide, a fragment of the antibody, a vector comprising a nucleic acid coding for the antibody, a cell comprising the vector comprising a nucleic acid coding for the antibody, and a cell comprising the vector comprising a nucleic acid coding for the antibody fragment, optionally combined or together with suitable additives and/or auxilaries, is administered to the patient in need of a treatment in a therapeutically effective amount.
- [352] Preferably the method of treatment is directed to a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the method of treatment is directed to an epithelial cancer that is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [353] Methods of administering such compounds or cells have been described in detail above.
- [354] The term "therapeutically effective amount" refers to the administration of an amount of the compound to the patient that results in an "effective treatment" as defined above. Determination of the therapeutically effective amount of the compound(s) is generally known to the person skilled in the art.

- [355] Such methods of treating allow effective treatment of a liver disorder and/or epithelial cancers as described above.
- [356] In another aspect of the invention it is provided a method of stimulating an immune response in a patient suffering from a liver disorder and/or an epithelial cancer to a polypeptide according to the invention, or a functional variant thereof, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such treatment in an amount effective to stimulate the immune response in the patient.
- [357] When compared to the state of the art of therapy of liver disorders and/or other epithelial cancers, the method of stimulating an immune response according to the invention surprisingly provides an improved, sustained and/or more effective immunization.
- [358] In another aspect of the invention it is provided a method of preventing a patient from developing a liver disorder and/or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such preventive treatment in a therapeutically effective amount.
- [359] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the method of preventing according to the invention surprisingly provides an improved, sustained and/or more effective preventive measure.
- [360] Preferably the method of preventing and/or method of stimulating an immune response is directed to a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular, preferably the method of preventing and/or method of stimulating an immune response is directed to an epithelial cancer which is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

- [361] In another aspect of the invention it is provided a method of identifying a pharmacologically active compound comprising the following steps (a) providing at least one nucleotide according to the SEQ ID 94 to SEQ ID 186, or a variant thereof, (b) contacting said nucleotide(s) with suspected to be pharmacologically active compound(s), (c) assaying the interaction of said nucleotide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said nucleotide(s) of step (a).
- [362] In a further aspect the invention relates to a method of identifying at least one pharmacologically active compound comprising the following steps: (a) providing at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof, (b) contacting said polypeptide(s), with suspected to be pharmacologically active compound(s), (c) assaying the interaction of said polypeptide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said polypeptide(s) of step (a).
- [363] Preferably said nucleotide(s) or said polypeptide(s) is (are) provided in a form selected from the group of said nucleotide(s) or said polypeptide(s) is (are) attached to a column, said nucleotide(s) or said polypeptide(s) is (are) attached to an array, said nucleotide(s) or said polypeptide(s) is (are) contained in an electrophoresis gel, said nucleotide(s) or said polypeptide(s) is (are) attached to a membrane, and said nucleotide(s) or said polypeptide(s) is (are) expressed by a cell.
- [364] It is preferred but not intended to be limited to assay the interaction by a method selected from the group of enzyme and fluorescence based cellular reporter assays in which interaction of the compound suspected to be pharmacological active with a recombinant fusion protein including said polypeptide(s) of step (a) is detected. The interaction may preferably also be assayed by displacement of specific nucleic acid binding aptamer molecule(s) on the recombinant fusion protein, surface plasmon resonance, HPLC and mass spectroscopy.
- [365] Preferably the direct or indirect interaction is selected from the group consisting of induction of the expression of said nucleotide(s) or said polypeptide(s), inhibition of the expression of said nucleotide(s) or said polypeptide(s), activation of the function of said nucleotide(s) or said polypeptide(s), inhibition of the function of said nucleotide(s) or said polypeptide(s).
- [366] In a preferred embodiment a method for identifying an antagonist/inhibitor against the nucleotide according to the SEQ ID 94 to SEQ ID 186, or a variant thereof, comprising (a) contacting at least one nucleotide according to the SEQ ID 94 to SEQ ID 186 with a putative antagonist/inhibitor, and (b) determining whether the putative

antagonist/ inhibitor prevents the activity of the nucleotide.

- [367] In a further aspect of the invention, a method for identifying a putative antagonist/ inhibitor against the polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof, comprising (a) contacting at least one polypeptide according to the SEQ ID 1 to SEQ ID 93 with the putative antagonist/inhibitor, and (b) determining whether the putative antagonist/ inhibitor prevents the activity of the polypeptide.
- [368] The term "pharmacologically active substance" in the sense of the present invention is understood as meaning all those molecules, compounds and/or compositions and substance mixtures which can interact under suitable conditions with a nucleotide according to the SEQ ID 94 to 186 or variants thereof, if appropriate together with suitable additives and/or auxiliaries.
- [369] The term "pharmacologically active substance" in the sense of the present invention is also understood as meaning all those molecules, compounds and/or compositions and substance mixtures which can interact under suitable conditions with polypeptide according to the SEQ ID 1 to 93 or functional variants thereof, if appropriate together with suitable additives and/or auxiliaries.
- [370] Possible pharmacologically active substances are simple chemical (organic or inorganic) molecules or compounds, but can also include peptides, proteins or complexes thereof. Examples of pharmacologically active substances are organic molecules that are derived from libraries of compounds that have been analyzed for their pharmacological activity. On account of their interaction, the pharmacologically active substances can influence the expression and/or function(s) of the nucleotide or polypeptide *in vivo* or *in vitro* or alternatively only bind to the nucleotides or polypeptides described above or enter into other interactions of covalent or non-covalent manner with them.
- [371] A suitable test system, for example, that can be used in accordance with the invention is based on identifying interactions with the two hybrid system (Fields and Sternglanz, 1994, Trends in Genetics, 10, 286-292; Colas and Brent, 1998 TIBTECH, 16, 355-363). In this test system, cells are transformed with expression vectors that express fusion proteins that consist of at least one polypeptide according to the invention and a DNA-binding domain of a transcription factor such as Gal4 or LexA. The transformed cells also contain a reporter gene whose promoter contains binding sites for the corresponding DNA-binding domain. By means of transforming a further expression vector, which expresses a second fusion protein consisting of a known or unknown polypeptide and an activation domain, for example from Gal4 or herpes simplex virus VP16, the expression of the reporter gene can be greatly increased if the second fusion protein interacts with the investigated polypeptide according to the

invention. This increase in expression can be used for identifying new interacting partners, for example by preparing a cDNA library from e.g., liver tissue, or diseased liver tissue for the purpose of constructing the second fusion protein. In a preferred embodiment, the interaction partner is an inhibitor of at least one of the polypeptides according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186) or functional variants thereof. This test system can also be used for screening substances that inhibit an interaction between the polypeptide according to the invention and an interacting partner. Such substances decrease the expression of the reporter gene in cells that are expressing fusion proteins of the polypeptide according to the invention and the interacting partner (Vidal and Endoh, 1999, Trends in Biotechnology, 17: 374-81). In this way, it is possible to rapidly identify novel active compounds that can be employed for the therapy of and/or prevention of liver disorders and/or epithelial cancer.

[372] Assays for identifying pharmacologically active substances that exert an influence on the expression of proteins are well known to the skilled person (see, for example, Sivaraja et al., 2001, US 6,183,956). Thus, cells that express a polypeptide according to the SEQ ID 1 for example, or functional variants thereof can be cultured as a test system for analyzing gene expression *in vitro*, with preference being given to liver cells. Gene expression is analyzed, for example, at the level of the mRNA or of the proteins using methods generally known to the person skilled in the art. In this connection, the quantity of a polypeptide according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186) or mRNA present after adding one or more putative pharmacologically active substances to the cell culture is measured and compared with the corresponding quantity in a control culture. This is done, for example, with the aid of an antibody specifically directed against the polypeptide according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186), or a functional variant thereof, which can be used to detect the polypeptide present in the lysate of the cells. The amount of expressed polypeptide can be quantified by methods generally known to the person skilled in the art using, for example, an ELISA or a Western blot. In this connection, it is possible to carry out the analysis as a high-throughput method and to analyze a very large number of substances for their suitability as modulators of the expression of at least one of the polypeptides according to the SEQ ID 1 to 93 (encoded by the SEQ ID 13 to 24) (Sivaraja et al., 2001, US 6,183,956). In this connection, the substances to be analyzed can be taken from substance libraries (see, e.g. DE19816414) that can contain many thousands of substances, which are frequently very heterogeneous.

[373] The invention will now be further illustrated below with the aid of the figures and examples, representing preferred embodiments and features of the invention without the invention being restricted hereto.

[374]

[375] **Figure 1 to 8 RNA expression levels in hepatocellular carcinoma (HCC) samples**

[376] Summary boxplot of expression values in HCC versus non-diseased liver cDNA microarray experiments is provided. The box plot is a graphical representation of log<sub>2</sub> expression value ratios with the median value indicated by a horizontal line in each box. The extent of each box indicates the iqr = interquartile range (+/- 25<sup>th</sup> percentile of median value); whiskers indicate of 1.5 times the iqr. Ratios that do not fall within this range are indicated with small circles. For each nucleic acid according to the invention (SEQ ID 95 to 186) elevated expression is apparent in HCC in comparison to non-diseased liver samples. For gene abbreviations see Tables 2A to 2D (\*\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products.

[377]

[378] **Figure 9 to 99: RNA expression levels in various diseased liver samples and normal tissue(s)**

[379] Summary boxplots of expression values (SEQ ID 94 to 186) in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis samples (Cirrh.) versus non-neoplastic liver cDNA microarray experiments are provided. The box plot analogs are used as described in Figure 1. For each nucleic acid according to the invention, elevated expression is apparent in HCCs and most of the FNHs samples. Legend: A= HCC; B= FNH; C= Cirrh. For gene abbreviations see Table 2A to 2D (\*\*) c-syn represents three alternative nucleotide transcripts with corresponding three protein products.

[380]

[381] **Figure 100 to 104 : Verification of differential gene expression when compared to normal tissue(s) and other types of cancer**

[382] The Assay-On-Demand (Applied Biosystems, USA) quantitative PCR (Q-PCR) method is utilized for verification of disease deregulated expression of nucleic acids PACE4; BIGH3; s.t.OCIA; SDCCAG28; Rab2; TM4SF4; DAD-1. In Figures 100 to 103, for example, the following commercially available Assay-On-Demand primers are employed: Hs00159844\_m1 for PACE4 (SEQ ID 98); Hs00154671\_m1 for BIGH3 (SEQ ID 99); Hs00215197\_m1 for s.t.OCIA (SEQ ID 101); Hs00246405\_m1 for SDCCAG28 (SEQ ID 102); Hs00234094\_m1 for Rab2 target (SEQ ID 106), Hs00270335\_m1 for TM4SF4 (SEQ ID 112); Hs00154671\_m1 for DAD-1 (SEQ ID 140). In another example (Figure 104), the AKR1C1 PCR product is monitored accordingly by incorporation of fluorescent double-stranded DNA intercalating molecules such as SYBR green. The increased expression of AKR1C1 (SEQ ID 96) in

HCC when compared to normal liver (NNL) is verified by using the SEQ ID 199 and SEQ ID 200 primers; data for B and C are not available. Overall, Mann-Whitney-U Test (non-parametric test applied for non-normally distributed data) is performed as Wilcoxon Rank Sum Test (Hollander & Wolfe, 1973, Nonparametric statistical inference. New York: John Wiley & Sons, pgs. 27-33, 68-75; Bauer, D.F., 1972, J. Amer. Statistical Assoc. 67, pgs 687-690). The expression values typically do not fit to a normal distribution so averaging the values may be misleading. However, analysis of the median values demonstrates significant differences in most of the cases between experimental and reference values, particularly in the large data sets.

[383] Legend: A= Hepatocellular Carcinoma (HCC); B= Focal Nodular Hyperplasia (FNH); C= Cirrhosis (Cirrh.); D= Non-Neoplastic liver (NNL). For gene abbreviations see Table 2A to 2D.

[384] **Figure 105: SDCCAG28 protein expression in tissues**

[385] Protein extracts are subjected to immunoblot analysis with HuCAL™ antibodies (Morphosys AG, Germany) specific to recombinant SDCCAG28 protein (e.g., MOR3491 anti ORI010), in order to determine the level of expression of the protein in human tissues [a= ORI010 (human SDCCAG28 recombinant protein); b= Hepatocellular Carcinoma (HCC); c= Normal Liver (NL); d= hepatoma HepG2 cell line. Annotated 33kDa position reflects a size of the predicted SDCCAG28 protein. Following incubation with an anti-HIS mouse antibody to specifically detect the HuCAL™ antibody and a horse-radish peroxidase (HRP) conjugated anti-mouse antibody the immune complexes are detected with a chemiluminescent HRP substrate. It is evident that the native SDCCAG28 protein migrates slightly faster than the recombinant SDCCAG28 protein (approximately 44 kDa band in lane a compared with 40.5 kDa bands prominent in lanes b and d). The intensities of the SDCCAG28 protein band are clearly stronger in the HCC tissue and in the HepG2 hepatoma cell line lysate (lanes b and d, respectively) than in the normal liver tissue (lane c). These analyses indicate that SDCCAG28 protein, the functional product of the SDCCAG28 mRNA specifically upregulated in HCC, is also highly overexpressed in HCC when compared to NNL.

[386]

[387] **Figure 106 to 107: Expression of HCC deregulated genes correlates with proliferation of hepatoma cells**

[388] Proliferation-dependent expression of target gene sequences according to the invention in hepatoma cells Hep3B (Figure 106) and HepG2 (Figure 107) following serum stimulation for 8 hours (black columns) and for 12 hours (white columns) of quiescent cells. The log<sub>2</sub>-transformed ratios of serum-stimulated vs. quiescent expression values from cDNA microarray experiment readout are provided. The

substantial increase in the level of expression of these sequences (for example, (ZNF216) SEQ ID 95; (AKR1C1) SEQ ID 96; (PACE4) SEQ ID 98; (SDCCAG28) SEQ ID 102; (TMP21) SEQ ID 104 and (RAB2) SEQ ID 106) in proliferating compared to quiescent hepatoma cells suggests that elevated expression of these sequences is functionally significant for liver cancer cell growth. For gene abbreviations see Table 2A to 2D.

[389]

[390] **Figure 108 to 109: Effect of dUT specific inhibitor on growth of proliferating liver cancer (hepatoma) cell lines**

[391]

Specific dUT enzyme inhibitor (DMT-dU

(5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine) (Sigma; No. D7279) is added to the hepatoma cells (Hep3B in Figure 108 and HepG2 in Figure 109) at the 10, 25, 50, 100, 250 and 500 µM final concentrations in a maximum of 3 µl of the appropriate solvent. Following incubation of the cells for 24 (black columns) and 48 hours (white columns) respectively, cell viability is assessed via an MTT (3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide) reduction assay known in the prior art (CellTiter 96 Aqueous One Solution Cell Proliferation Assay; Promega), and plotted relative to the number of cells in wells not treated with the inhibitor (control = 0; no inhibitor added). The relationship between the increased concentration of the inhibitor and absorbance (A= 495nm) reflects the Hep3B/ HepG2 cytostatic/ anti-proliferative response, suggesting that dUT gene correlates with human liver tumor cell proliferation.

### Examples

[392]

[393]

**Example 1: Preparation of HCC subtracted cDNA libraries**

[394]

RNA is isolated from three pathologist-confirmed HCC tumor samples and from three pathologist-confirmed non-diseased human liver samples using the TRIZOL reagent (Invitrogen) according to standard methods (Chomczynski & Sacchi, 1987, Anal. Biochem. 162:156-159). The tissues used for the generation of cDNA libraries is from patients that provided specific informed consent for utilization of this material for research purposes, including commercial research. mRNA is converted to double stranded cDNA with reverse transcriptase and DNA polymerase as described in the instructions provided in the "PCR select cDNA subtraction kit" from Clontech Laboratories. To enrich for cDNAs specifically increased and decreased in HCC, cDNAs expressed in common and at similar levels in the reference liver pool and in HCC are removed by subtractive suppressive hybridization (SSH) according to the instructions provided in this kit and as described by Diatchenko et al. (1996, Proc. Natl. Acad. Sci.

USA 93:6025-6030). The SSH steps are performed in both directions (subtracting non-diseased liver cDNAs from HCC cDNAs and subtracting HCC cDNAs from non-diseased liver cDNAs) so the resulting cDNA molecules represent nucleic acid sequences both up- and down-regulated in HCC but do not represent those that are not differentially expressed. In addition a normalized but not subtracted HCC cDNA library is generated to better represent rare mRNA transcripts in HCC tissues. These cDNAs are separately cloned into the pCRII vector (Invitrogen) by ligation into this plasmid followed by electrophoretic transformation into *E. coli* XL-1-Blue electroporation-competent cells (Stratagene). The cloning is carried out as described by the supplier of the vector and competent cells. Cloned differentially expressed cDNAs are plated onto selective (ampicillin) media to isolate individual clones. 960 clones are isolated from each SSH library and 384 clones isolated from the normalized HCC library and cultures established in 96-well microtiter plates. Together these cDNA clones provide a unique representation of mRNA expression specific for human HCC tissue.

[395]

[396] **Example 2: Preparation and hybridization of HCC cDNA microarrays**

[397] 1 ml cultures of the SSH cDNA library clones described above are established and the cDNA inserts amplified by PCR with primers specific to the vector sequence flanking the cDNA inserts. The M13 forward (5'- gtaaaaacgacggccag-3'; SEQ ID 42) and M13 reverse primers (5'-caggaaacacagctatgac-3'; SEQ ID 43) are employed for the PCR amplification of clone inserts. Fifty microliters of the bacterial cultures are heat denatured at 95°C for 10 minutes, debris removed by centrifugation, and 2 µl of the supernatant included in a standard PCR [1X AmpliTaq PCR buffer, 2.5 mM MgCl<sub>2</sub>, 37.5 nM each primer, 0.5 mM each of dATP, dCTP, dGTP and dTTP and 1.5 units AmpliTaq DNA polymerase (Applied Biosystems)]. Reaction conditions are 95°C for 5 minutes followed by 35 cycles of: 94°C for 30 seconds, 60°C for 30 seconds, 72°C for 60 seconds; then followed by 72°C for 7 minutes and then cooled to 4°C. Amplification of cDNA inserts is confirmed by electrophoresis of a 5% of the PCR on a 1% agarose gel comprising 0.4 mg/ml ethidium bromide and run in 1X Tris Acetate EDTA (TAE; 40mM Tris-acetate, 1mM EDTA, pH 7.5) buffer. Each of the SSH clone amplified insert sequences is affixed to sialinized glass microscope slides (GAPS Corning) using a GeneticMicrosystems 417 cDNA arrayer robot to generate custom HCC cDNA microarrays. The protocol for spotting the cDNA inserts to the slides is according to that published by Hedge et al. (2000, Biotechniques 29:548-560) except that PCR products are spotted directly from the PCR microtiter plates without purification or adjustment of the cDNA buffer. In addition to the SSH cDNA clone inserts, numerous control DNAs are spotted onto the microarrays as controls for hybridization reactions. Further,

approximately 2000 publicly available cDNA clones corresponding to genes previously reported to be involved in cancer are purchased from the German Genome Research Center (RZPD), expanded, amplified and spotted onto these microarrays as described above. For preparation of hybridization probes, 20 micrograms of RNA from additional pathology-confirmed liver disorders and from the same quantity of pooled non-diseased liver RNA is converted to cy5-fluorescence-labeled and cy3-fluorescence-labeled cDNA, respectively (cy5-CTP and cy3-CTP, Pharmacia) using reverse transcriptase according to the standard methods (Hedge et al., 2000, Biotechniques 29: 548-560). Using this protocol, these labeled cDNAs are competitively hybridized to the HCC microarrays. Following prehybridization at 42°C for 45 minutes in 5X SCC (0.75 M sodium citrate, 75 mM sodium citrate, pH 7.0); 0.1% SDS (sodium dodecyl sulfate) and 1% BSA (bovine serum albumin), the hybridization is carried out overnight at 42°C in buffer comprising 50% formamide, 5XSSC, and 0.1% SDS. Hybridized slides are washed in stringent conditions (twice at 42°C in 1X SSC, 0.1% SDS for 2 minutes each; twice at room temperature in 0.1X SSC, 0.1% SDS for 4 minutes each; and twice at room temperature in 0.05X SSC for 2 minutes each), dried and analyzed with the GeneticMicrosystems 418 cDNA microarray scanner and associated Imagene 4.1 image analysis software according to the manufacturer's recommendations.

[398]

... [399] **Example 3: Independent verification of differential expression of the nucleic acids and polypeptides according to the invention**

[400]

RNA is isolated from human patient samples as described in detail above. HCC samples for this analysis are not from the same patients as employed for production of the HCC SSH library or for cDNA microarray chip hybridization. In addition to HCC samples, RNA is prepared from independent non-diseased liver samples to assess expression of the nucleic acids according to the invention in non-diseased liver tissue. Further, RNA is prepared from additional non-diseased and cancer tissues to assess expression of the nucleic acids according to the invention in other normal human tissues and other human cancers. One mg of RNA is converted to single-strand cDNA with the aid of Superscript reverse transcriptase (Invitrogen) in dATP, dCTP, dGTP, and dTTP (0.4 mM each), 7.5 nM random 6-nucleotide primer (hexamers), 10 mM dithiothreitol and 1 unit RNase inhibitor using standard procedures known in the art (Sambrook et al., Molecular Cloning, 2<sup>nd</sup> ed., 1989, Cold Spring Harbor Press, NY, USA, pp. 5.52-5.55). The presence or absence and the relative concentration of the nucleic acids according to the invention is then confirmed and verified by amplification of these sequences from the cDNA with primer pairs specific to each nucleic acid according to the invention in quantitative kinetic PCR experiments. The

Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method well known for the person skilled in the art might be utilized for verification of disease deregulated expression of nucleic acids according to the invention (Figure 3A/3B). For example, the Assay-On-Demand ID primer numbers for PACE 4, BIGH3, s.t.OCIA, SDCCAG28, Rab2, PRKAR1A, PRDX1, IQGAP2, TM4SF4, DAD-1 target genes are given in the following Table 8.

[401]

**Table 8: Target clones and their Assay-On-Demand ID**

**Table 8**

Gene	Assay ID (Catalogue Number)
PACE4	Hs00159844_m1
BIGH3	Hs00154671_m1
s.t.Ocia	Hs00215197_m1
SDCCAG28	Hs00246405_m1
Rab2	Hs00234094_m1
PRKAR1A	Hs00267597_m1
PRDX1	Hs 00602020_m1
IQGAP2	Hs00183606_m1
TM4SF4	*** Hs00270335_m1
DAD-1	Hs00154671_m1

[403]

[404] In further example, AKR1C1 PCR product is monitored accordingly by incorporation of fluorescent double-stranded DNA intercalating molecules such as SYBR green. The AKR1C1 cDNA is validated by using following primers: AKR1C1-p1, 5'-ttggaaaggtaactgaaaaatct-3' (SEQ ID 199) and AKR1C1-p2, 5'-gttggctgcggtaagttgg-3' (SEQ ID 200) verifying the specific expression of this gene (SEQ ID 96) in HCCs when compared to normal liver samples (Figure 104).

[405]

Usually PCR is performed according to the manufacturer's instructions using TaqMan Universal PCR Mastermix (Cat.Nr. 4304437; Applied Biosystems, Branchburg, New Jersey USA). Kinetic quantitative PCR analyses are performed by using the 7000 Sequence Detection System (Applera). The PCR Setup included two reference genes [GAPDH and Beta-Actin (GAPDH primers used = GAPDH-p1, SEQ ID 187; GAPDH-P2, SEQ ID 188; GAPDH-p3, SEQ ID 189) (Beta-Actin primers used = BetaActin-p1, SEQ ID 190; BetaActin-p2, SEQ ID 191; BetaActin-p3, SEQ ID 192)] which are used for independent normalisation of the investigated target genes. A standard curve

(125ng, 25ng, 5ng and 1ng) is used for proper calculation of the expression data. The PCR sample contained 12.5 ng of cDNA, 12.5 µl Universal PCR Mastermix and 1.25µl Assay-On-Demand reagent to give a final volume of 25µl. PCR conditions are used according to the manufacture's instructions (2 min 50°C, 10 min 95°C followed by 40 cycles of 15 sec 95°C and 1 min at 60°C). Amplification of cDNA inserts is additionally confirmed by electrophoresis of a 10% of the PCR on a 2.5% agarose gel comprising 0.5 mg/ml ethidium bromide and run in 1X Tris Acetate EDTA (TAE) buffer. Standard controls for RT-PCR including RNase treatment of samples prior to cDNA synthesis and omission of reverse transcriptase routinely demonstrate the specificity of these reactions. The kinetic quantitative RT-PCR (Q-PCR) verifies the over expression of sequences according to the invention in liver cancer and other liver disorder relative to non-diseased liver (Figures 100 to 104).

- [406] Furthermore, the protein expression analyses indicate that for example SDCCAG28 protein, the functional product of SDCCAG28 mRNA specifically upregulated in HCC, is also significantly overexpressed in HCC (Figure 105). To detect SDCCAG28 protein expression in HCC samples standard western blot analysis known in the prior art is performed using protein extracts derived from frozen tissues (stored in liquid nitrogen). The 50 µm sections are obtained (HCC, normal liver) using a refrigerated microtome (cyrocut, Leica CM3050), wherein the identity and homogeneity of the tissues under scrutiny is verified by H&E-staining of sections taken before, in between and after each cutting process. Tissues sections (HCC, normal liver), SDCCAG28 antigen (Morphosys AG, Germany) and HepG2 cells are resuspended in ice-cold RIPA-buffer (50 mM Tris-HCl pH 7.4, 250 mM NaCl, 0.1% SDS, 1% deoxycholate, 1% NP-40) supplemented with 2 µg/ml leupeptin, 2 µg/ml pepstatin, 2 µg/ml aprotinin, 1 mM phenylmethylsulfonylfluoride (PMSF), and 2 mM dithiothreitol followed by homogenization through sonication (2 bursts of 5 seconds) on ice. After incubation for 20 minutes on ice, the lysates are cleared by two centrifugational steps in a microcentrifuge at 13 000 rpm for 15 minutes at 4°C and the supernatants are collected. Protein concentrations are determined by the Bradford assay(Biorad) using bovine serum albumin as a standard. Equal amounts of protein (typically 10-30 µg) are separated on a 12% SDS-PAGE gel and transferred electrophoretically to a polyvinylidene diflouride (PVDF) membrane (Hybond-P, Amersham Biosciences) through Semidry-blotting (TE 70, Amersham). The membrane is blocked for 1 hour (or overnight) at room temperature in blocking solution [5 to 10% milkpowder (Microbiology/Lactan:1.15363.0500) in TBS-T (25 mM Tris-HCl pH 7.4, 137 mM NaCl, 3 mM KCl, comprising 0.1% Tween-20 (Merck: 822184) and 2% BSA (Sigma:A-7906)] and incubated with the primary antibody specific for the SDCCAG28 recombinant protein (Morphosys AG, Germany), usually in the concentration between

30ng to 50ng/ml in TBS-T/1% milk solution at 4°C overnight with agitation. After removal of the primary antibody solution and several washes in TBS-T, the membrane is incubated with a mouse anti-HIS antibody to specifically detect the primary antibody (Dianova, 1:25000) followed by a rabbit anti-mouse HRP (horse-radish peroxidase)-conjugated antibody (Dako, 1: 1000) for one hour at room temperature. Following several washes in TBS-T, detection is performed through chemiluminescence (ECL, Amersham) detection of HRP activity and exposing the membrane to x-ray film.

- [407] These data provide independent verification of deregulated expression of the nucleic acids and polypeptides according to the invention in HCC. Expression of the nucleic acids and polypeptides according to the invention is either absent or observed only at very low levels in non-diseased liver, thereby validating the differential expression of these nucleic acids identified by hybridization to the cDNA microarray. The results provide surprising evidence that the nucleic acids and polypeptides according to the invention can be used to diagnose, prevent and/or treat disorders according to the invention.
- [408]
- [409] **Example 4: Sequences according to the invention are increased in proliferating liver cancer (hepatoma) cell lines**
- [410] Human hepatoma cell lines (Hep3B, HepG2) are cultured in DMEM supplemented with 10% fetal bovine serum (FBS) in a humidified incubator with 5% CO<sub>2</sub> at 37°C. The cells are split to about 20% confluence and subsequently rendered quiescent by culturing in the absence of serum for 3 days. After the starvation period, the cells are stimulated to proliferate by the addition of 10 % FBS to the media. Samples are taken before and following the induction of cell growth (0, 8 and 12 hours) for the preparation of RNA and for determination of the position of the cells in the cell cycle by FACS (fluorescence activated cell sorting) analysis. Accordingly, to determine the cell cycle distribution by propidium iodide (PI) staining, the cells are harvested by trypsinization, washed twice with phosphate buffered saline (PBS) and finally resuspended in 500 µl PBS. Subsequently, 5 ml prechilled methanol is added. After 10 minutes incubation at -20°C the cell suspension is directly used for FACS analysis following 3 times washing in PBS, resuspended in 500 µl propidium iodide (PI) staining buffer (DNA-Prep Stain, Part No. 6604452; Beckman Coulter) and incubated for 15 minutes at 37°C. Finally, 70 µl of 1M NaCl is added and the samples are kept on ice protected from light prior to analysis on an EPICS XL-MCL flow cytometer (Beckman Coulter). Cells prepared from an asynchronous cell population are used as reference.
- [411] The isolated RNA is used to monitor the expression of genes in quiescent vs. pro-

liferating hepatoma cells by cDNA microarray analysis. Following labeling with fluorescent dyes as described in example 2, the RNAs are hybridized on a specifically developed HCC- specific cDNA microarray chip that also contained control genes which are known to be expressed in a cell cycle dependent manner. Finally, the data are analysed using ImaGene 4.1 and GeneSight software packages. The signals obtained for 0 hours samples isolated before the addition of serum are used as reference. The log<sub>2</sub>-transformed ratios of serum-stimulated vs. quiescent expression values from the cDNA experiment readout is provided in Figure 106 to 107.

[412] These data indicate that the sequences according to the invention are correlated with human liver tumor cell proliferation. Compared to the state of the art, these nucleic acids and polypeptides therefore surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[413]

[414] **Example 5: Effect of dUT specific small molecule inhibitor on growth of proliferating liver cancer (hepatoma) cell lines**

[415] To determine the effects of small molecule inhibitors of activity of enzyme polypeptides according to the invention on the growth of human hepatoma cells, for example a specific dUT inhibitor (DMT-dU (5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine) (Sigma; No. D7279) is employed. Hep3B or HepG2 cells are seeded into 96-well plates at 10,000 and 7,500 cells, respectively, in a total volume of 150 µl of growth DMEM media supplemented with 10% fetal calf serum. The next day of incubation at 37 °C, the dUT enzyme inhibitor is added to the cells at the 10, 25, 50, 100, 250 and 500 µM final concentrations in a maximum of 3 µl of the appropriate solvent. Following incubation of the cells for 24 and 48 hours, cell viability is assessed via an MTT (3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide) reduction assay known in the prior art (CellTiter 96 Aqueous One Solution Cell Proliferation Assay; Promega) according to the manufacturer's instructions. Thirty µl of the assay reagent are added directly to the culture wells, incubated for 1-2 hours and then absorbance at 495 nm is recorded using a microtiter plate reader (Anthos 2010; Anthos Labtec Instruments). Each value represents the mean of at least 4 replicates. Control cells (= 0) receive solvent only (Figures 108 to 109)

[416] The relationship between the increased concentration of the inhibitor and absorbance indicates that application of the aforementioned specific dUT inhibitor to hepatoma cells elicits a cytostatic/ anti-proliferative response, suggesting a specific role of the dUT gene in human liver tumor cell proliferation.

[417]

[418] **Example 6: Elevation of enzymatic activity in hepatoma cells correlates with**

### **AKR1C1 target gene overexpression in liver disorders**

- [419] A comparison of the enzymatic activity of a target gene encoded polypeptide gives insight whether a deregulation of mRNA transcript is also reflected by a significant increase in activity that indicates its functional role in tumor biology. In a substrate-specific reaction, the activity of AKR1C1 (SEQ ID 96) is determined (see below Table 9).
- [420] Enzymatic assays are performed by using lysates prepared from frozen tissues (stored in liquid nitrogen) or from cell pellets derived from asynchronously growing human hepatoma cell lines (Hep3B, HepG2). 50 µm sections obtained from pieces of frozen tissues using a freezing microtome (Cryocut, Leica CM3050) and the identity and homogeneity of the tissues under scrutiny is verified by a pathologist following H &E-staining of sections taken before, in between, and after each cutting process. Tissues sections as well as frozen cell pellets are resuspended in ice-cold lysis buffer (50 mM KPO<sub>4</sub>, pH 7.0, 10 mM KOAc, 2 mM MgCl<sub>2</sub>) supplemented with 2 µg/ml leupeptin, 2 µg/ml pepstatin, 2 µg/ml aprotinin, 1 mM phenylmethylsulfonylfluoride, and 2 mM dithiothreitol followed by homogenization through sonication (2 bursts of 3 seconds) on ice. After incubation for 15 minutes on ice, the lysates are cleared by two centrifugation steps in a microcentrifuge at 13,000 rpm for 15 minutes at 4°C and the supernatants are collected. Protein concentrations are determined by the Bradford assay (Biorad) using bovine serum albumin as a standard.
- [421] The AKR1C1 enzymatic activity is measured spectrophotometrically based on the oxidation of 1-acenaphtheneol in 1.0 ml systems containing 1 mM 1-acenaphtheneol (in 4% methanol), 2.3 mM NAD<sup>+</sup>, and various amounts of whole cell lysate in 100 mM potassium phosphate buffer (pH 7.0). Reactions runs at 25°C wherein the change in absorbance of pyridine nucleotide over time is monitored at 340 nm on a Beckman DU640 spectrophotometer. Absorbance values are plotted versus time, and slope-values versus time (min<sup>-1</sup>) are calculated from initial reaction velocities using linear least-squares regression analysis, see Table 9 (HCC = Hepatocellular Carcinoma; NNL = Non-Neoplastic (Normal) Liver).
- [422]
- [423]
- [424]
- [425]
- [426] **Table 9: Enzymatic assay for AKR1C1 (SEQ ID 96)**
- [427]

**Table 9**

Tissue	Protein con-	Slope	Weighted Mean of
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	centration [µg ]	time <sup>-1</sup> [min <sup>-1</sup> ]	the slope [min <sup>-1</sup> ]
NNL1	100	0.0048	0.0043
	200	0.0076	
NNL2	100	0.0057	0.0054
	200	0.0102	
HCC11	100	0.0130	0.0127
	200	0.0247	
HCC28	100	0.0097	0.0095
	200	0.0187	
HCC30	100	0.0334	0.0317
	200	0.0599	
HCC2	100	0.0136	0.0102
	200	0.0137	
HCC13	100	0.0158	0.0128
	200	0.0197	

[428]

[429] The HCC samples (HCC11, HCC28, HCC30 and HCC2) are characterized by a weighted mean of the slope approximately 2-3-fold higher than the NNL samples. These data clearly show the correlation between the upregulation of AKR1C1 gene transcript in HCC with the induction of the AKR1C1 enzymatic activity in hepatoma cell lines, suggesting that the sequences according to the invention are correlated with human liver tumor cell proliferation. Compared to the state of the art, these nucleic acids and polypeptides therefore surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[430]

[431]

[432] **Example 7: A method of diagnosing using HCC specific probes**

[433] A diagnostic method for disorders according to the invention preferably based on the polymerase chain reaction (PCR) can be established. A standard PCR detection of nucleic acid sequences of the invention can be sufficient to identify, for example, circulating HCC tumor cells in the blood stream of the patient. Detection of expression of nucleic acid sequences of the invention in tumor biopsy material however, such as from a fine needle biopsy, would also be a preferred indication for this diagnostic

procedure. Nucleic acid sequences of the invention, ZNF216 (SEQ ID 95) for example, are not detected in most non-diseased tissues and relatively specifically expressed in e.g. HCC. Elevated expression of this nucleic acid in FNH and HCC is also demonstrated indicating the potential discriminatory power of such an approach for differential diagnosis of liver diseases (Figures 1 and 9; Tables 3A/4A).

[434] The PCR diagnostic would preferably require approximately 1 pg, preferably at least 100 ng, more preferably at least 1 µg of RNA isolated from patient material. In the preferred utilization the RNA would be isolated according to standard procedures from, e.g., the white blood cell fraction preferably from circulating blood obtained by the minimally invasive venupuncture procedure. In this preferred case, the procedure would detect the presence of HCC tumor cells in the blood circulatory system. RNA could similarly be isolated from liver or other tissue biopsy material.

[435] For specific detection of ZNF216, the PCR diagnostic would include several primers specific for ZNF216 nucleic acid sequence, including a specific primer set for cDNA synthesis from the RNA generated from the patient sample, such as for example (ZNF216-p1, 5'-ttctttctgcacatgaaacatctg-3' (SEQ ID 195). Also included would be forward and reverse PCR primers specific for ZNF 216 nucleic acid sequence such as for example, ZNF216-p2, 5'-gagaggacaaaataactaccc-3' (SEQ ID 196) and ZNF216-p3, 5'-caattcaggagcttttcttca-3' (SEQ ID 197), and for increased specificity and heightened sensitivity a fluorescently-labeled hydrolysis probe would be included such as, for example, ZNF216-pr, 5'-tactggctgagaaactgtatggactggctga-3', SEQ ID 198 (from nucleotide 694 to 663 of the SEQ ID 95 reverse strand). The specificity of this detection assay may be further heightened with alternative primers specific for the ZNF216 sequence including an independent pair of specific PCR forward and reverse primers ("nested" primers) located on the amplicon of the outer forward and reverse PCR primers. In this case the probe primer would be specific for the amplicon the nested PCR primer pair.

[436] Quantitative assessment of AKR1C1 mRNA levels, for example, may also be achieved in such detection strategies as illustrated in Figure 3C using kinetic quantitative PCR with, for example:

[437] cDNA may be prepared from the patient RNA sample following digestion of the RNA with RNase-free DNase-1 (Roche) to eliminate potential contamination by genomic DNA. This contamination possibility is further controlled by including primers for PCR amplification from sequences of different exons of the gene such that PCR products resulting from a genomic DNA template (and thereby not reflective of expression of the mRNA corresponding to for example ZNF216) would be larger than the RNA specific PCR products. cDNA synthesis can e.g. be primed by the ZNF216-specific ZNF216-p1 (SEQ ID 195; at about 1 µM) with the aid of reverse tran-

scriptase [such as Maloney murine leukemia virus reverse transcriptase (Roche) at about 2 unit/reaction] in an appropriate buffer such as 50 mM Tris-HCl, 6 mM MgCl<sub>2</sub>, 40 mM KCl, and 10 mM dithiotreitol, pH 8.5. Also required in the cDNA synthesis reaction is dATP, dCTP, dGTP and dTTP, each at about 1 mM, RNase inhibitor, such as placental RNase inhibitor (Roche) at about 1-10 units/reaction. cDNA synthesis would be preferably carried out at 42°C for 30 to 60 minutes followed by heating at 95° C for 10 minutes to denature the RNA template. The resulting cDNA can be employed as the template for a PCR to detect ZNF 216 in the blood (or liver or tissue biopsy sample). The additional reagents required for PCR detection of ZNF216 would preferably also be provided including: 10X Taq DNA polymerase buffer (500 mM Tris-Cl pH 8.3, 25 mM MgCl<sub>2</sub>, 0.1% Triton X-100); a mixture of dATP, dCTP, dGTP and dTTP for a final concentration of 0.2 mM each; Taq DNA polymerase (2.5U/reaction), and ZNF216 specific primers such as ZNF216-p1 (SEQ ID 195), ZNF216-p2 (SEQ ID 196) and ZNF216-p3, (SEQ ID 197), and for increased specificity and heightened sensitivity a fluorescently-labelled hydrolysis probe ZNF216-pr, SEQ ID 198 (0.1 - 1 µM final concentration). A positive control for PCR amplification such DNA from a plasmid clone with the ZNF216 sequence insert would preferably also be included (1-10 ng/reaction). The PCR can e.g. be carried out over 22-40 cycles of 95°C for 30 seconds, 60°C for 30 seconds, 72°C for 60 seconds. As indicated above, preferred additional sensitivity and specificity may be achieved in this diagnostic procedure by utilization of the additional ZNF216 primer set located within the sequence amplified with the original PCR primer set. In this case a subsequent PCR under conditions similar to those utilized in the first PCR reaction except that would be employed to amplify the nested sequence in a reaction that included 1-10 µl of the first PCR as the template DNA. Alternatively, the reaction may preferably be carried with the first primer set for 10-15 cycles after which and 1-10 µl of this reaction then included as template in a new PCR reaction with nested primers (and including all the necessary PCR components). Detection of ZNF216 specific PCR product(s) should preferably utilize agarose gel electrophoresis as is known in the art and described in previous examples. Included in the diagnostic should preferably be a comparable fluid or tissue extract as a control for such PCR-based diagnostic test. This may include serum or plasma from non-diseased individuals and/or serum, plasma or tissue extracts from an appropriate animal model. If the PCR-determined expression of the nucleic acid according to the invention such as the product of the reaction with primers ZNF216-p1 (SEQ ID 195), ZNF216-p2 (SEQ ID 196) , ZNF216-p3 (SEQ ID 197) and ZNF 216-pr (SEQ ID 198) is upregulated in the sample isolated from the patient relative to the control and if in particular the upregulated expression essentially matches the disorder specific (mean) expression ratios then such matching is indicative

of the patient suffering from the disorder. Variations on this approach can also be appreciated. The cDNA synthesis and PCR amplifications can be carried out sequentially or simultaneously in a single reaction vessel utilizing heat stable DNA polymerases with reverse transcriptase activities, such as provided by the Titan one-tube or *Carmoxydothermus* DNA polymerase one-set RT-PCR systems from Roche. Alternatively the PCR product can be monitored by incorporation of fluorescently labeled primers or various fluorescence-based indicators of PCR product including the Taqman probe hydrolysis systems, as described above and with fluorescent double-stranded DNA intercalating molecules such as SYBR green. The fluorescent-based approaches provide advantage as the accumulation of PCR product can be continuously monitored to achieve sensitive quantitative assessment of expression of the nucleic acid according to the invention. This should be particularly advantageous for nucleic acids increased in blood or tissues of disorders according to the invention but also present at lower levels in non-diseased patients and tissues such that quantitative information about the level of expression of the nucleic acid is acquired. Further, as with this example, accurate quantitation of nucleic acid expression levels contributes to differential diagnosis, between cirrhosis and HCC for example. Comparison of this data with supplied standards indicative of disease and absence of disease provides an important advantage for such a diagnostic procedure.

[438] Additional variations on this diagnostic strategy include simultaneous detection of multiple nucleic acids according to the invention and/or of nucleic acids according to the invention together with other nucleic acids implicated in the disorder. Further hybridization-based diagnostic detection of nucleic acids according to the invention is also envisioned. In this case mRNA detection preferably utilizing detection of RNA transferred to a membrane by capillary or electrophoretic blotting, RNase protection or in situ hybridization on patient cells or tissue biopsy samples is also effective.

[439] By similar methods and variants thereof the nucleic acids according to the invention and/or of nucleic acids according to the invention together with other nucleic acids can be utilized for diagnosis of the disorders according to the invention.

[440]

[441] **Example 8: A method of diagnosing via antibody detection of polypeptides according to the invention**

[442] A preferred diagnostic method for disorders according to the invention is based on antibodies directed against a polypeptide according to the invention. For example, a diagnostic procedure may preferably employ serum detection of specific upregulated gene proteins via enzyme-linked immunosorbent assay (ELISA) assay. In a simple form the diagnostic assay preferably includes a microtiter plate or strip of microtiter wells, e.g., thoroughly coated with an isolated and purified antibody specific to a

polypeptide according to the invention such as, ZNF216 (SEQ ID 2), AKR1C1 (SEQ ID 3). The antibody may for example be an affinity purified polyclonal antibody, such as is commonly raised in rabbits, for example, or a purified monoclonal antibody such as is commonly produced in mice according to procedures well established in the art (Cooper, H.M. & Paterson, Y., (2000), *In Current Protocols in Molecular Biology* (Ausubel, F.A. et al., eds.) pp. 11.12.1 – 11.12.9, Greene Publ. & Wiley Intersci., NY); (Fuller S.A. et al., (1992), *In Current Protocols in Molecular Biology* (Ausubel, F.A. et al., eds.) pp. 11.4.1 – 11.9.3, Greene Publ. & Wiley Intersci., NY). Preferably, the antibody may a recombinant antibody obtained from phage display library panning and purification as has been described by Knappik et al. (2000, *J. Molec. Biol.* 296:57-86) or by Chadd and Chamow (2001 *Curr. Opin. Biotechnol.* 12:188-94), or a fragment thereof. The antibody coating is preferably achieved by dilution of the anti-ZNF216.pr antibody or anti-AKR1C1.pr antibody to 1-100 µg/ml in a standard coating solution such as phosphate buffered saline (PBS). The antibody is preferably bound to the absorptive surface of the microtiter well (such as a Nunc Maxisorp immunoplate) for 60 minutes at 37°C, or overnight at room temperature or 4°C. Prior to binding sample to the coated wells, the wells are preferably thoroughly blocked from non-specific binding by incubation for 15-60 minutes at room temperature in a concentrated protein solution such as 5% bovine serum albumin in phosphate buffered saline or 5% non-fat dry milk powder resuspended in the same buffer. Preferably, the patient sample material is then applied to the microtiter wells, diluted into the blocking solution to increase specificity of detection. The sample may be for example plasma or serum or protein extract from tissue biopsy or surgical resection prepared according to methods well known in the art (Smith, J.A. (2001) *In, Current Protocols in Molecular Biology*, Ausubel, F.A. et al., eds) pp. 10.0.1- 10.0.23, Greene Publ. & Wiley Intersci., NY). In particular, the patient sample is brought into contact with the antibody-coated well for 30-120 minutes (or longer) at room temperature or at 4°C. Non-specifically interacting proteins are preferably removed by extensive washing with a standard wash buffer such as 0.1 M Tris-buffered saline with 0.02-0.1% Tween 20, for example. Washes are preferably carried out for 3-10 minutes and repeated 3-5 times. Detection of ZNF216 polypeptide in the patient sample is for example achieved by subsequent binding reaction with a second, independent anti-ZNF216 antibody, generated as described above, recognizing a distinct epitope on the ZNF216 polypeptide in the standard two-site ‘sandwich’ type ELISA. Binding of the second anti-ZNF216 antibody or AKR1C1 antibody is for example achieved by incubating the wells in the antibody (at a concentration of 1-100 µg/ml in blocking solution, for example) at room temperature for 30-60 minutes followed by extensive washing as in the previous step. The second antibody may preferably be directly coupled to an enzyme capable of producing a

colorigenic or fluorogenic reaction product in the presence of an appropriate substrate, such as alkaline phosphatase. Alternatively, for example an anti-species and anti-isotype specific third antibody, so coupled to an enzyme, is employed to generate a reaction product that preferably can be detected in a standard spectrophotometric plate reader instrument. For the reaction product development, the washed (as above) antibody-antigen-enzyme complex is preferably exposed to the colorigenic substrate, such as AttoPhos from Roche for about 10 minutes at room temperature, the reaction may be stopped with a low pH buffer such as 50 mM Tris-HCl pH 5.5, or can instead be directly assayed. The amount of specifically bound ZNF216 polypeptide or AKR1C1 polypeptide is for example determined by measurement of the amount of the enzymatic reaction product in each well following excitation at the appropriate wavelength in the spectrophotometer (420 nm in this case). Measurement is preferably made in the plate reader at the emission wavelength (560 nm in this case). Preferably included in the diagnostic is a ZNF216 protein standard or an AKR1C1 protein standard, such as purified recombinant ZNF216 polypeptide or AKR1C1 polypeptide, for example. A dilution series of this protein standard is preferably included in parallel in the ELISA as a control for the reactions and to deduce a protein standard curve for comparison of polypeptide expression levels as is well known in the art. A concentration range corresponding indicative of the particular liver disorder(s) should preferably be provided in the diagnostic. In addition, a comparable fluid or tissue extract should preferably also be included as a control for such ELISA test. This may preferably include serum or plasma from non-diseased individuals and/or serum, plasma or tissue extracts from an appropriate animal model. Such ELISA detection diagnostics are common in the art (see for example, Hauschild et al., 2001, Cancer Res. 158:169-77). The sample: control protein levels determined by ELISA are compared with ELISA-determined disorder specific protein expression ratio values preferably determined in pathologist-confirmed tissues of patients suffering from a disorder according to the invention in relation to control samples. In case the protein level of the sample: control essentially matches the disorder specific protein expression ratio values such matching is preferably indicative of the patient suffering from the disorder. Preferably such diagnosis is carried out for more than 1 polypeptide according to the invention.

- [443] In addition the diagnostic may be directed to detecting an endogenous antibody directed against a polypeptide according to the invention, or a functional variant thereof or fragment thereof present in the sample isolated from a patient which antibody or fragment thereof is directed against a polypeptide according to the invention. Detection of such autoimmune antibodies may be accomplished by methods generally known to the skilled artisan, e.g. by immunoaffinity assays such the ELISA

described in detail above using polypeptides according to the invention or functional variants thereof or parts thereof as a probe. The presence of such autoimmune antibodies is indicative of the patient suffering from a disorder according to the invention.

- [444] In addition or alternatively, a relevant diagnostic kit based upon immunohistochemical detection of at least one polypeptide according to the invention can be formulated. In such a kit, for example a purified antibody or antibodies specific for the polypeptide(s) according to the invention can be included as well as preferably the reagents necessary to detect the binding of the antibody (ies) to patient cells or tissue sections. These reagents include, for example a specific anti-species and subtype specific secondary antibody -directed against a polypeptide according to the invention or a functional variant thereof- preferably coupled to an enzyme capable of catalysis of e.g. a colorogenic substrate or coupled to a fluorophore (such as Texas Red, for example). Preferably the enzymatic substrate would also be included as well as washing and incubation buffers. An additional optional component of such a kit may be a section of positive control tissue, e.g. liver, or tissues or a section from a packed pellet of cells specifically expressing the polypeptide(s) as a positive tissue control. Instructions provided would include preferred and/or alternative methods of antigen retrieval for detection of the polypeptide(s) according to the invention or e.g., indication that frozen, rather than formalin fixed and paraffin-embedded tissue material should be employed. In this case, recommendations would preferably be included for fixation of frozen tissue sample sections, such as immersion in ice-cold acetone for 10 minutes. Further instructions would preferably provide recommendations for the concentration of antibodies to use in the detection of the gene product(s) as well as e.g., recommended and suggested incubation times and temperatures for exposure of the tissue to the immunological reagents provided. Preferred reaction buffers for the antibody incubations, such as 0.01% - 0.1% tween-20 comprising phosphate buffered saline including 3% normal sheep serum, could also be included. Further, specific conditions for washing of the tissue sections prior to and following incubation in the specific antibody would be preferably included, such as for example, 4 washes with 0.1% tween-20 comprising phosphate buffered saline for 5 minutes each. Such immunohistochemical detection protocols are known to a person skilled in the art. In general the kit would preferably include a panel of images of specific immunohistochemical staining results from positive and negative tissue examples and in particular tables indicating which result is indicative of the patient suffering from the disorder to be diagnosed as a user guide. Utilization of such a kit would preferably rule out, support or confirm diagnoses of the aforementioned liver disorders, liver cancer, or epithelial cancers according to the invention.

- [445] As specified above for nucleic acid-based diagnostic approaches, diagnostics based on detection and/or quantitation of polypeptides according to the invention may include 1 or more of such polypeptides. Moreover, simultaneous detection of such polypeptides together with other peptides implicated in the disorders according to the invention may be employed in such diagnostics.
- [446] It will be apparent to those skilled in the art that various modifications can be made to the compositions and processes of this invention. Thus, it is intended that the present invention cover such modifications and variations, provided they come within the scope of the appended claims and their equivalents. All publications cited herein are incorporated in their entireties by reference.
- [447]

## Claims

- [001] A diagnostic comprising at least one compound selected from the group consisting of the polypeptide according to SEQ ID 1 to 93, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody or an antibody fragment directed against one of the aforementioned polypeptides, combined or together with suitable additives or auxiliaries.
- [002] The diagnostic according to claim 1, wherein the nucleic acid is a probe.
- [003] The diagnostic according to claim 2, wherein the probe is a DNA probe.
- [004] A pharmaceutical composition comprising at least one component selected from the group consisting of the polypeptide according to claim 1, a polypeptide according to SEQ ID 1 to 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, combined or together with suitable additives or auxiliaries.
- [005] The pharmaceutical composition according to claim 4, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [006] A method of diagnosis of a liver disorder or an epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, an antibody or a fragment of the antibody directed

against one of the aforementioned polypeptides, and an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.

- [007] The method according to claim 6, wherein the liver disorder, is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.
- [008] The method according to claim 6, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [009] A method of treating a patient suffering from a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according SEQ ID 1 to 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for the antibody, a cell comprising the vector comprising a nucleic acid coding for the antibody, and a cell comprising the vector comprising a nucleic acid coding for the antibody fragment, combined or together with suitable additives or auxiliaries, is administered to the patient in need of the treatment in a therapeutically effective amount.
- [010] The method of treating according to claim 9, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [011] The method of treating according to claim 10, wherein the RNA interference molecule is administered in the form of a double stranded RNA or a vector expressing the double stranded RNA.
- [012] The method according to claim 10, wherein the RNA interference molecule has a size range selected from the group consisting of from 15 to 30 nucleotides.
- [013] The method according to one of claims 9 to 12, wherein the liver disorder, is a

- disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.
- [014] The method according to one of claims 9 to 13, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [015] A method of stimulating an immune response to a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a patient suffering from a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93 , a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such treatment in an amount effective to stimulate the immune response in the patient.
- [016] A method for identifying at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the said nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [017] A method of diagnosing a liver disorder or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of said nucleic acid(s) in a reference library or in a reference sample, (c) identifying said(s) nucleic acid which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said nucleic acid(s) identified in step (c) to said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched nucleic acid(s) is (are) indicative of the patient suffering from a liver disorder or an

- epithelial cancer.
- [018] The method according to claim 17, wherein in step (a) at least 2 nucleic acids are identified.
- [019] The method according to claim 17, wherein in step (a) the detection of said nucleic acid(s) is (are) by PCR based detection or by a hybridization assay.
- [020] The method according to one of claims 17 to 19, wherein in step (b) the expression of said nucleic acid(s) is compared by a method selected from the group consisting of solid-phase based screening methods, hybridization, subtractive hybridization, differential display, and RNase protection assay.
- [021] The method according to one of claims 17 to 20, wherein the sample isolated from the patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [022] The method according to one of claims 17 to 21, wherein the reference sample is isolated from a source selected from a non-diseased sample of the same patient and a non-diseased sample from another subject.
- [023] The method according to one of claims 17 to 22, wherein the reference sample is selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [024] The method according to one of claims 17 to 23, wherein the reference library is an expression library or a data base comprising clones or data on liver disorder-specific expression of said nucleic acid(s) of step (a).
- [025] The method according to one of claims 17 to 24, wherein the pathologic reference sample is isolated from a source selected from a diseased sample from another patient suffering from a liver disorder or epithelial cancer.
- [026] The method according to claim 17 to 25, wherein the pathologic reference library is a data base comprising data on differential expression of said nucleic acid(s) in step (a) in samples isolated from another patient suffering from a liver disorder or epithelial cancer relative to control expression in a reference sample or reference library.
- [027] The method according to claim 17 to 26, wherein the liver disorder, is a disorder selected from the group consisting of hepatocellular carcinoma, benign liver neoplasms, and cirrhosis.
- [028] The method according to claim 17 to 26, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin and the breast.

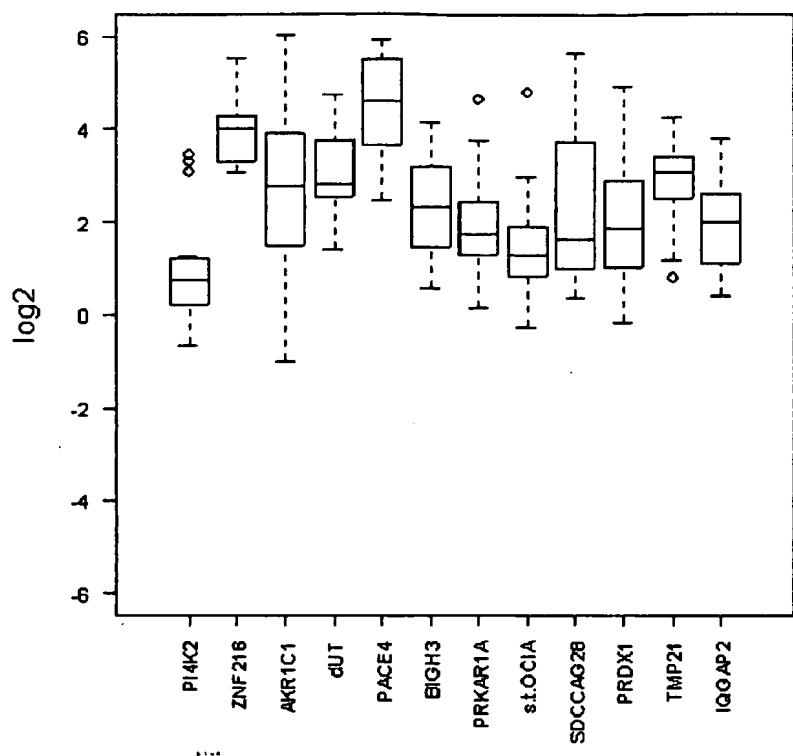
- [029] A method for identifying at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or a functional variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [030] A method of diagnosing a liver disorder or epithelial cancers comprising the following steps: (a) detecting the expression of at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or functional variants thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched polypeptide(s) are indicative of the patient suffering from a liver disorder, or an epithelial cancer.
- [031] The method according to claim 30, wherein at least 2 polypeptides are identified.
- [032] The method according to claim 30 or 31, wherein the polypeptides are detected by a method selected from the group consisting of gel electrophoresis, chromatographic techniques, immunoblot analysis, immunohistochemistry, enzyme based immunoassay, surface plasmon resonance, HPLC, mass spectroscopy, immunohistochemistry, and enzyme based immunoassay.
- [033] The method according to one of claims 30 to 32, wherein the polypeptides are compared by a method selected from the group consisting of two dimensional gel electrophoresis, chromatographic separation techniques, immunoblot analysis, surface plasmon resonance, immunohistochemistry, and enzyme based immunoassay.
- [034] The method according to one of claims 30 to 33, wherein the sample isolated from a patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

- [035] The method according to one of claims 30 to 34, wherein the reference sample is isolated from a source selected from a non-diseased sample of the same patient and a non-diseased sample from another subject.
- [036] The method according to one of claims 30 to 35 wherein the reference sample is selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [037] The method according to one of claims 30 to 36, wherein the reference library is an expression library or a data base comprising clones or data on liver disorder-specific expression of said polypeptide(s) of step (a).
- [038] The method according to claim 30 to 37, wherein the pathologic reference sample is isolated from a source selected from a diseased sample from another patient suffering from a liver disorder and epithelial cancer.
- [039] The method according to claim 30 to 38, wherein the pathologic reference library is a data base comprising data on differential expression of said polypeptide(s) of step (a) in samples isolated from another patient, suffering from a liver disorder or epithelial cancer, relative to control expression in a reference sample or reference library.
- [040] The method according to claim 30 to 39, wherein the liver disorders is a disorder selected from the group consisting of hepatocellular carcinoma, benign liver neoplasms, and cirrhosis.
- [041] The method according to one of claims 30 to 40, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [042] A method of preventing a patient from developing a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, or a variant thereof, a cell comprising one of the aforementioned nucleic acids, or a variant thereof, and a cell comprising the aforementioned vector, is administered to the patient in need of such preventive treatment in a therapeutically effective amount.
- [043] A method of identifying a pharmacologically active compound comprising the following steps: (a) providing at least one polypeptide according to the SEQ ID 1

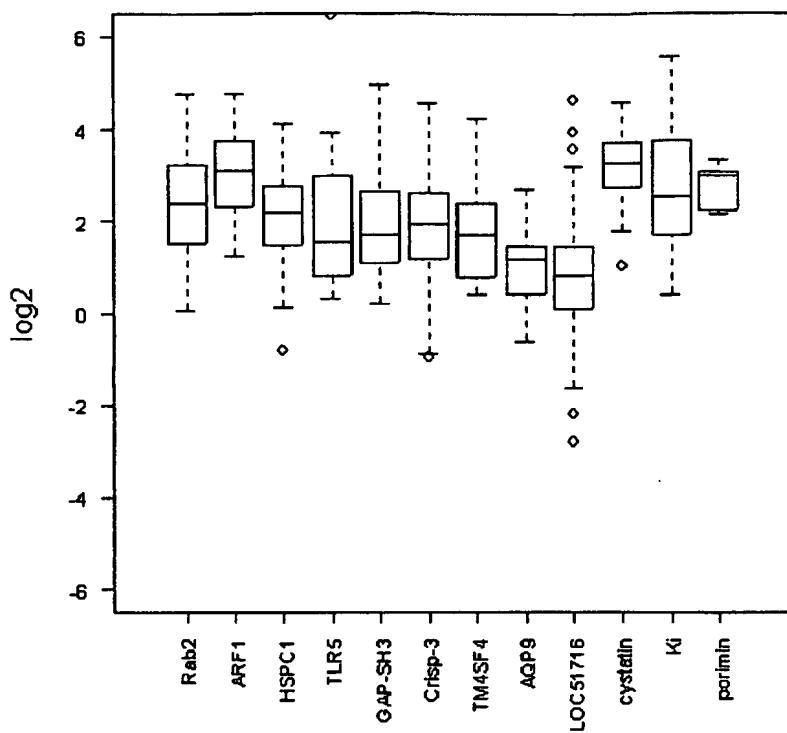
- to 93, or a functional variant thereof, (b) contacting said polypeptide(s) with (a) compound(s) suspected to be pharmacologically active , (c) assaying the interaction of said polypeptide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said polypeptide(s) of step (a).
- [044] The method according to claim 43, wherein said polypeptide(s) of step (a) is (are) attached to a column, said polypeptide(s) is (are) attached to an array, contained in an electrophoresis gel, attached to a membrane, or is (are) expressed by a cell.
- [045] The method according to claim 43 or 44, wherein the interaction is assayed enzyme or fluorescence based cellular reporter methods.
- [046] The method according to claim 43 or 44, wherein the interaction is assayed by surface plasmon resonance, HPLC, or mass spectroscopy.
- [047] The method according to claim 43, wherein the direct or indirect functional interaction of step (d) is selected from the group consisting of induction of the expression of said polypeptide(s) of step (a), inhibition of said polypeptide(s), activation of the function of said polypeptide(s), and inhibition of the function of said polypeptide(s).
- [048] An isolated polypeptide comprising a sequence according to SEQ ID 32, or a functional variant thereof.
- [049] A fusion protein comprising a polypeptide according to claim 48.
- [050] An isolated nucleic acid, or a variant thereof encoding the polypeptide according to claim 48.
- [051] The nucleic acid according to claim 50, wherein the nucleic acid is a single-stranded or double-stranded RNA.
- [052] The nucleic acid according to claim 50, wherein the nucleic acid comprises a nucleic acid according to SEQ ID 125.
- [053] A vector comprising a nucleic acid according to claim 50.
- [054] The vector according to claim 53, wherein the vector is selected from the group consisting of a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.
- [055] A cell comprising the nucleic acid according to claim 50.
- [056] A cell comprising the vector according to claim 53.
- [057] The cell according to claim 56, wherein the cell is a transgenic embryonic non-human stem cell.
- [058] A transgenic non-human mammal comprising the nucleic acid according to claim 50.

- [059] An antibody or an antibody fragment thereof, wherein the antibody is directed against the polypeptide according to claim 48 or against the nucleic acid according to claim 50.
- [060] A nucleic acid which comprises a nucleic acid having a sequence complementary to the nucleic acid according to claim 50 or a non-functional mutant variant of the nucleic acid according to claim 50.
- [061] The nucleic acid according to claim 60, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [062] A vector comprising the nucleic acid according to claim 60.
- [063] The vector according to claim 62, wherein the vector is selected from the group consisting of a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.
- [064] A cell comprising the nucleic acid according to claim 62.
- [065] A cell comprising the vector according to claim 64.

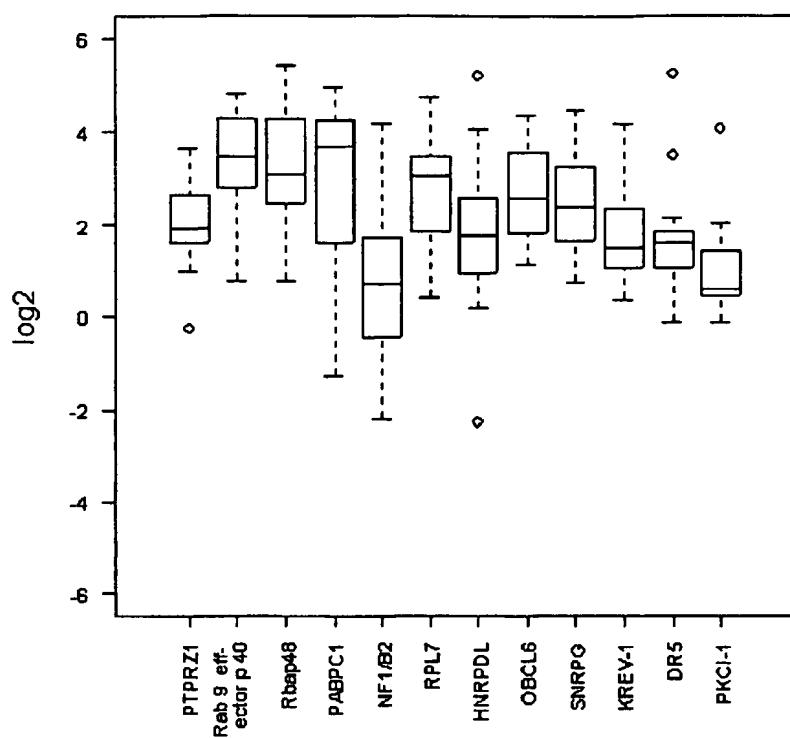
[Fig. 001]



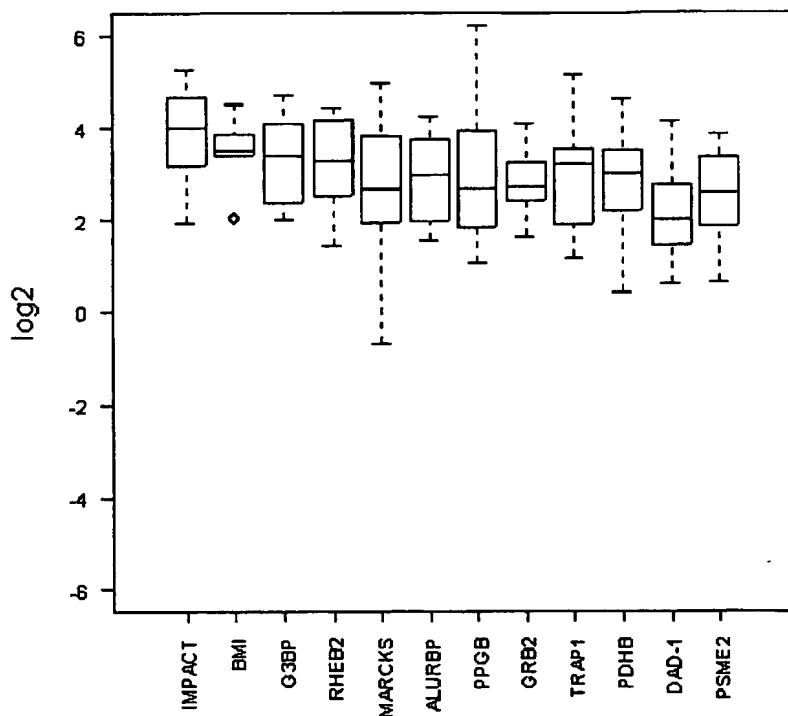
[Fig. 002]



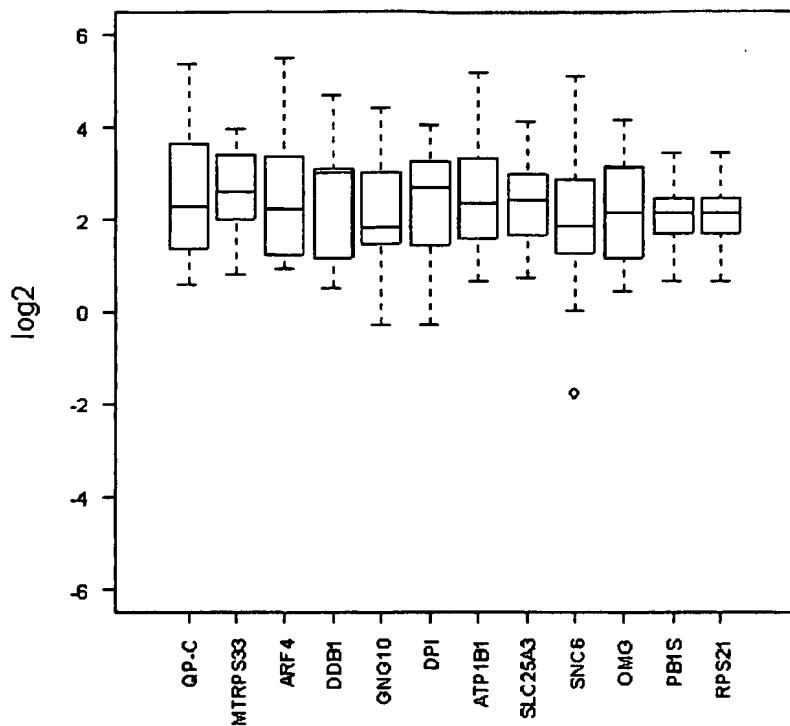
[Fig. 003]



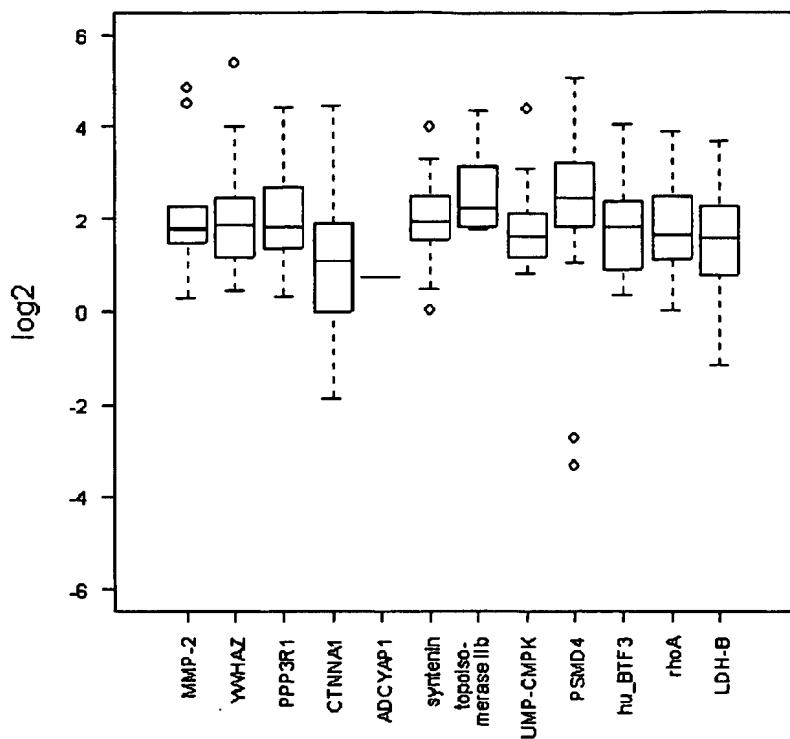
[Fig. 004]



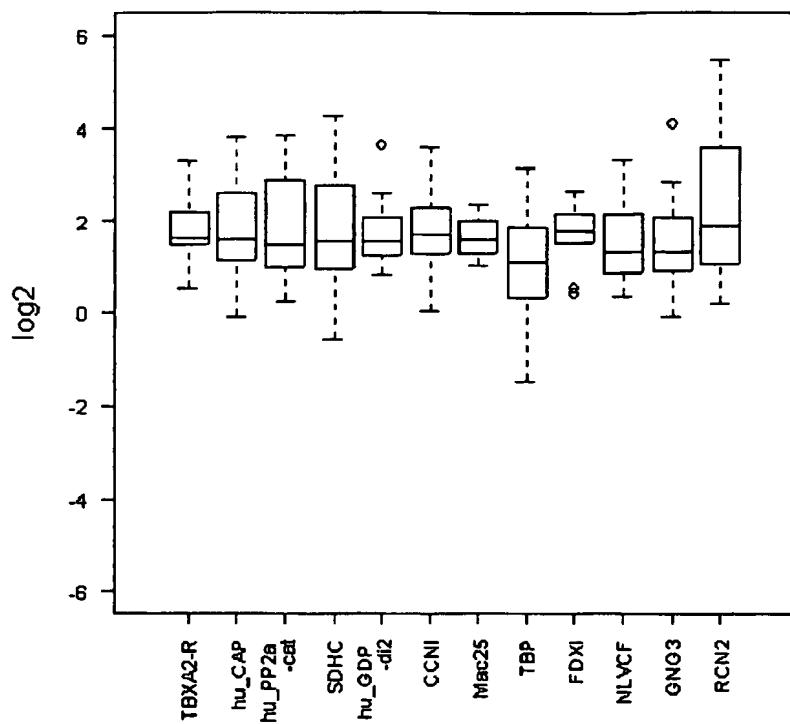
[Fig. 005]



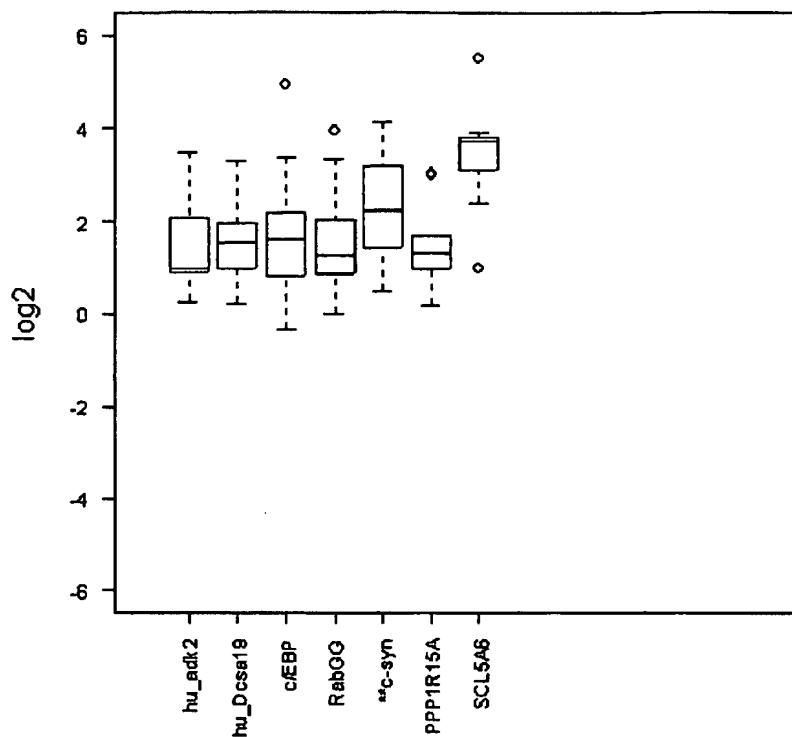
[Fig. 006]



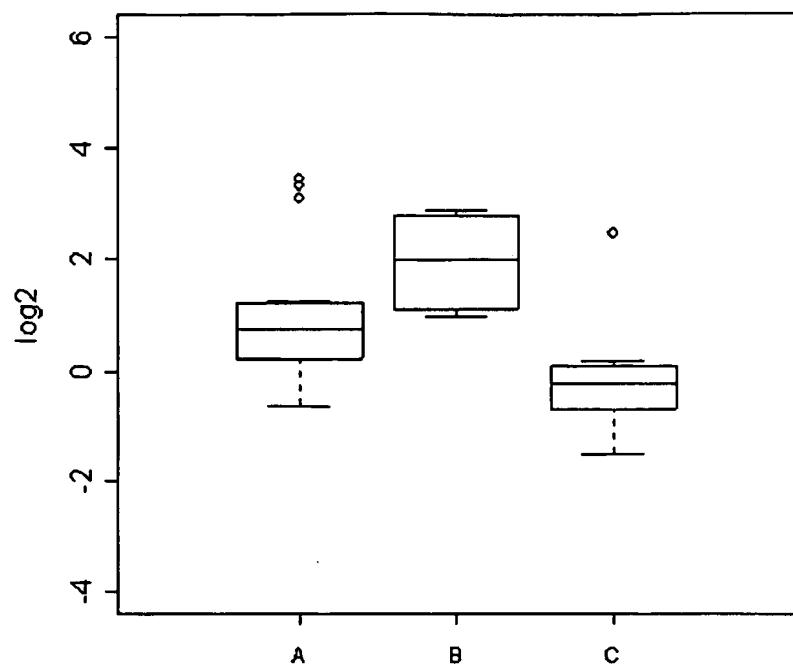
[Fig. 007]



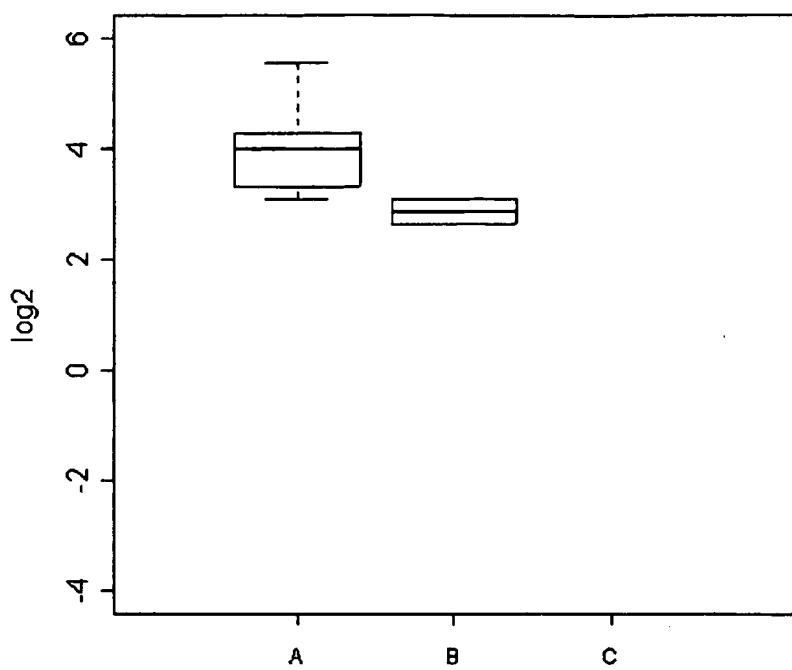
[Fig. 008]



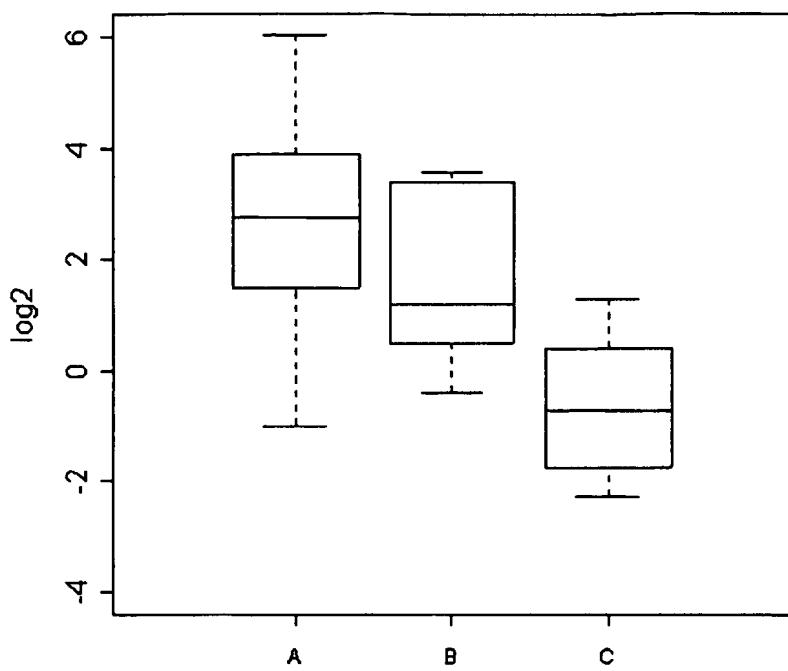
[Fig. 009]

**PI4K2**

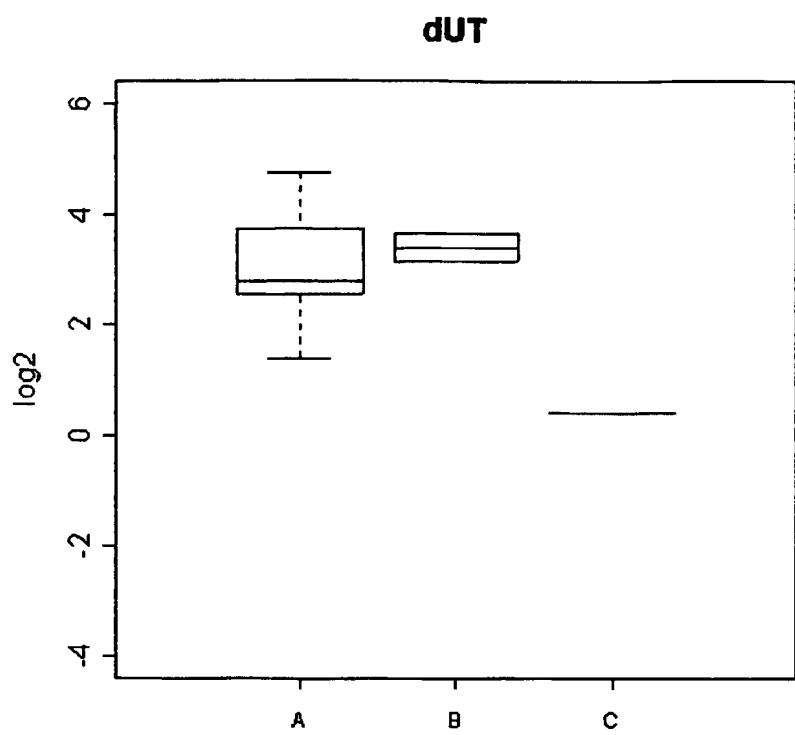
[Fig. 010]

**ZNF216**

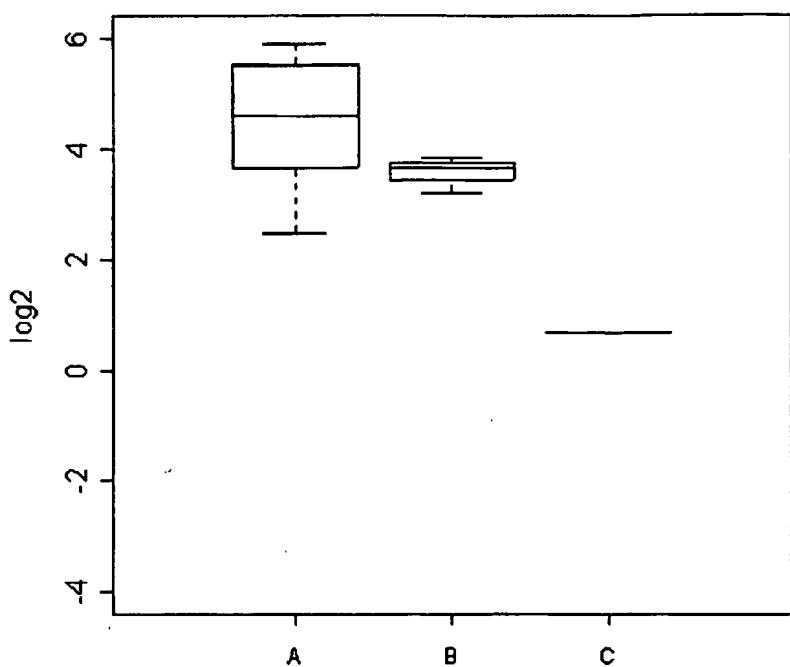
[Fig. 011]

**AKR1C1**

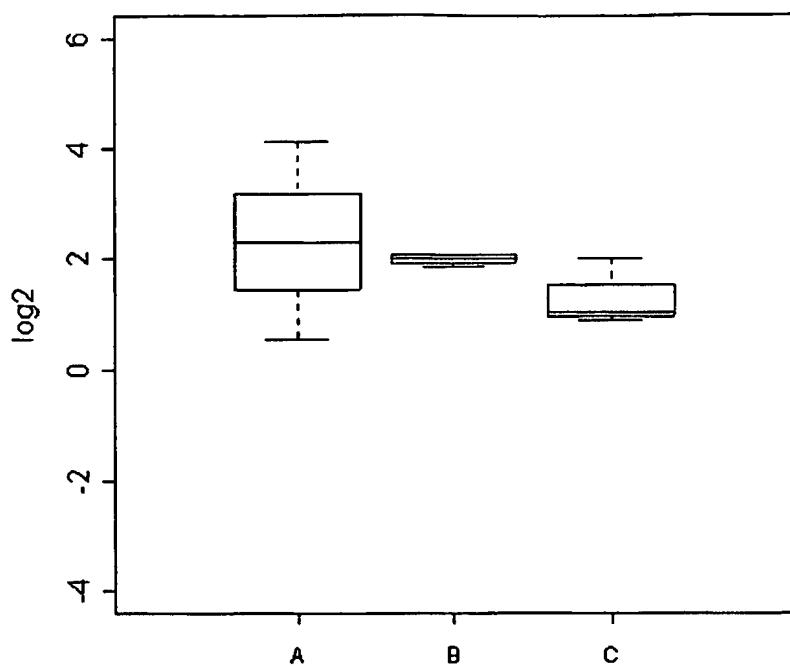
[Fig. 012]



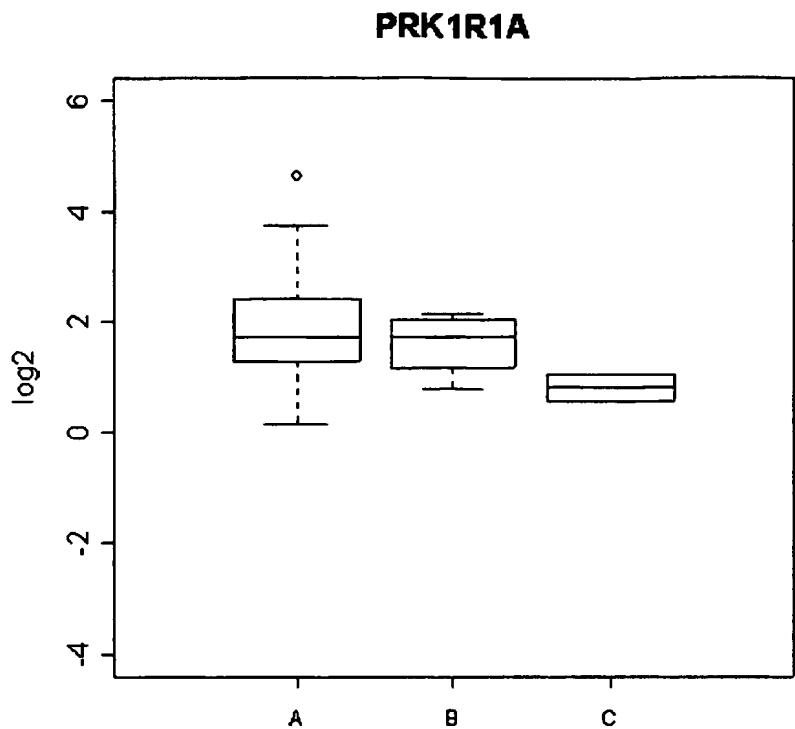
[Fig. 013]

**PACE4**

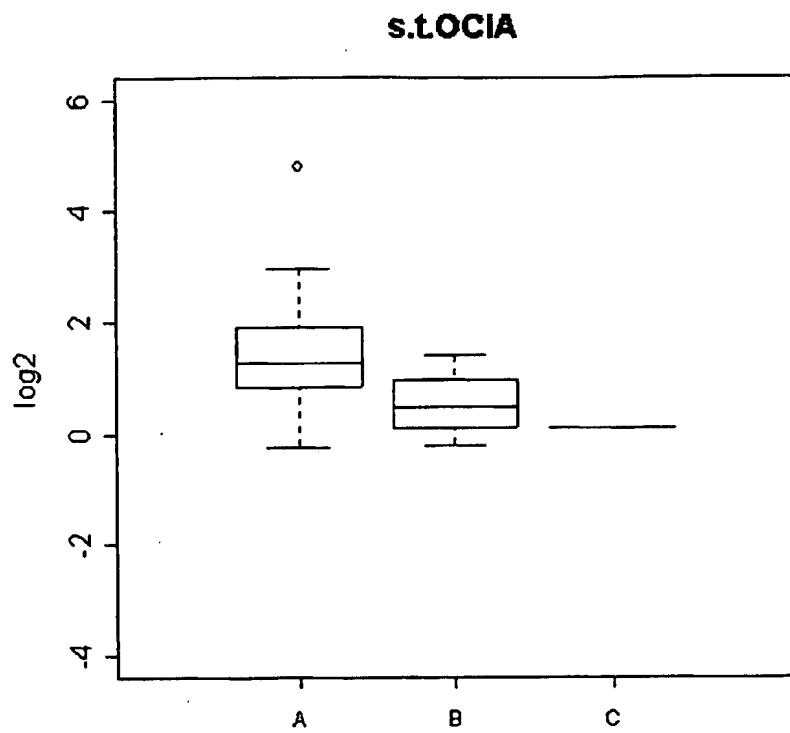
[Fig. 014]

**BIGH3**

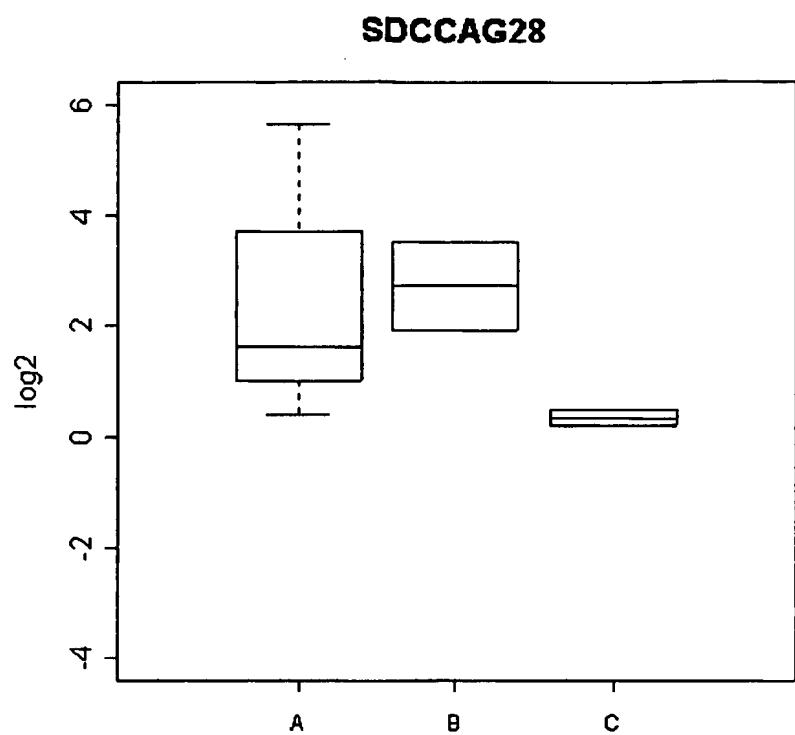
[Fig. 015]



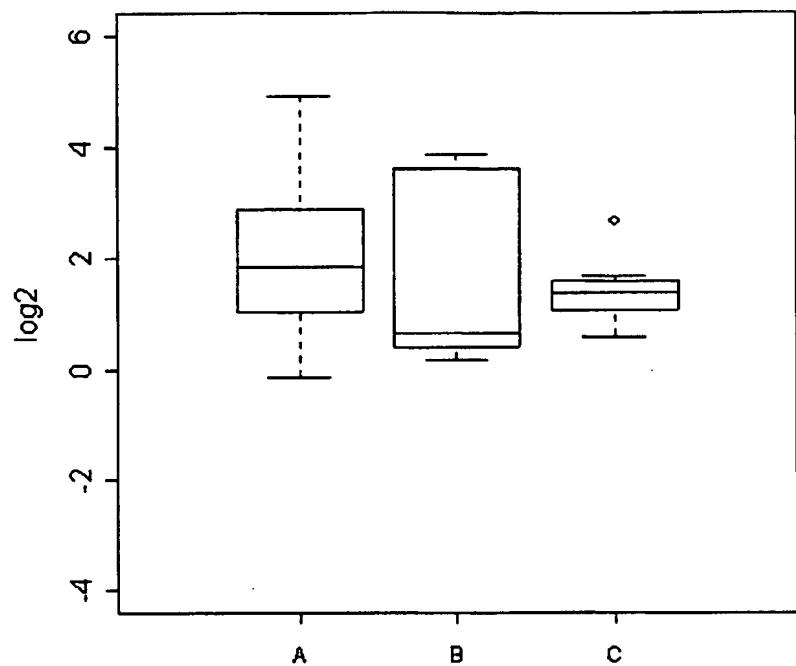
[Fig. 016]



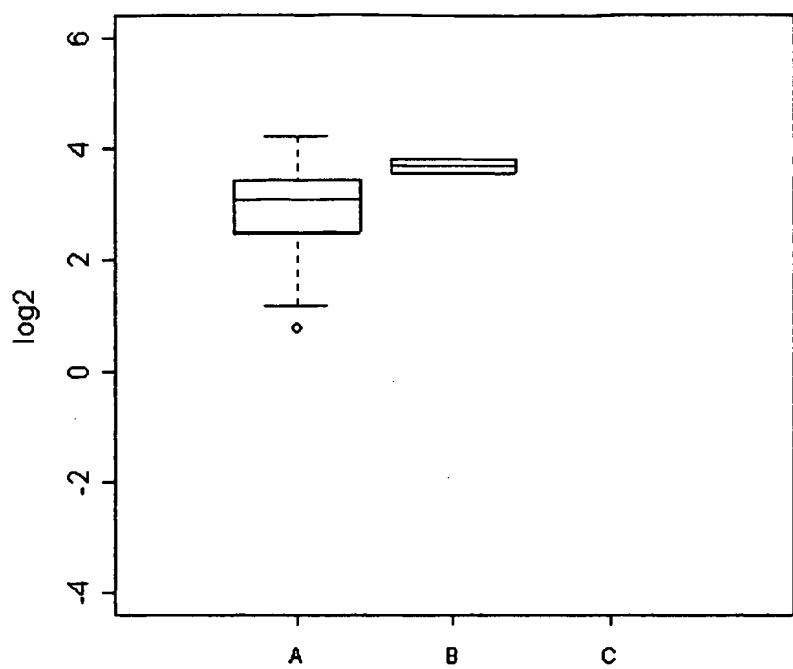
[Fig. 017]



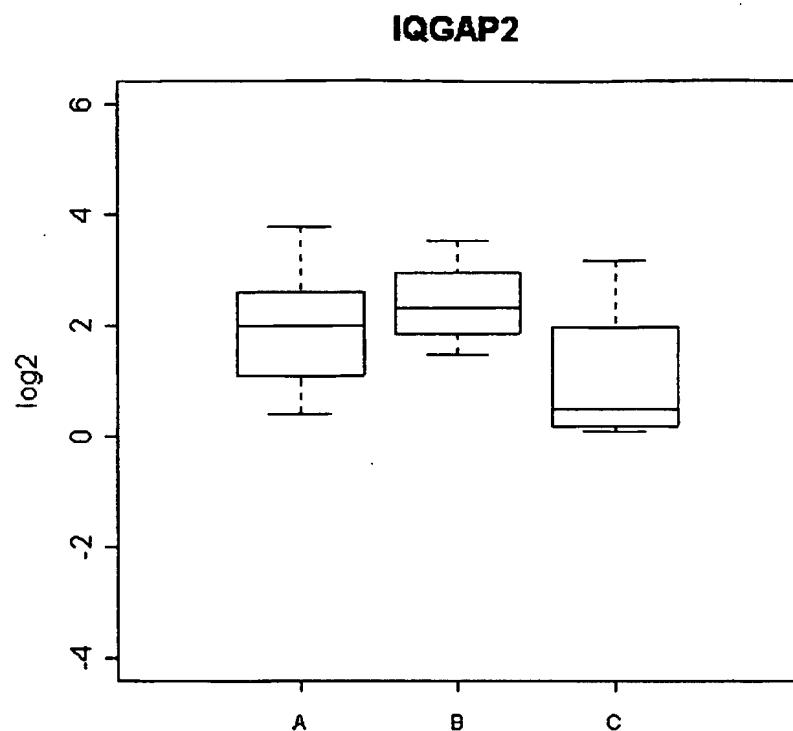
[Fig. 018]

**PRDX1**

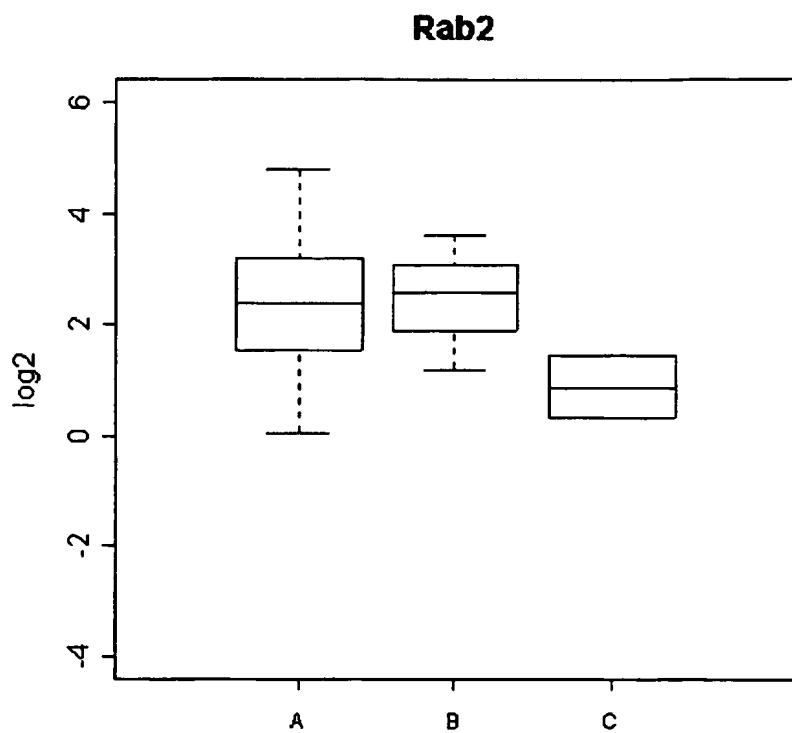
[Fig. 019]

**TMP21**

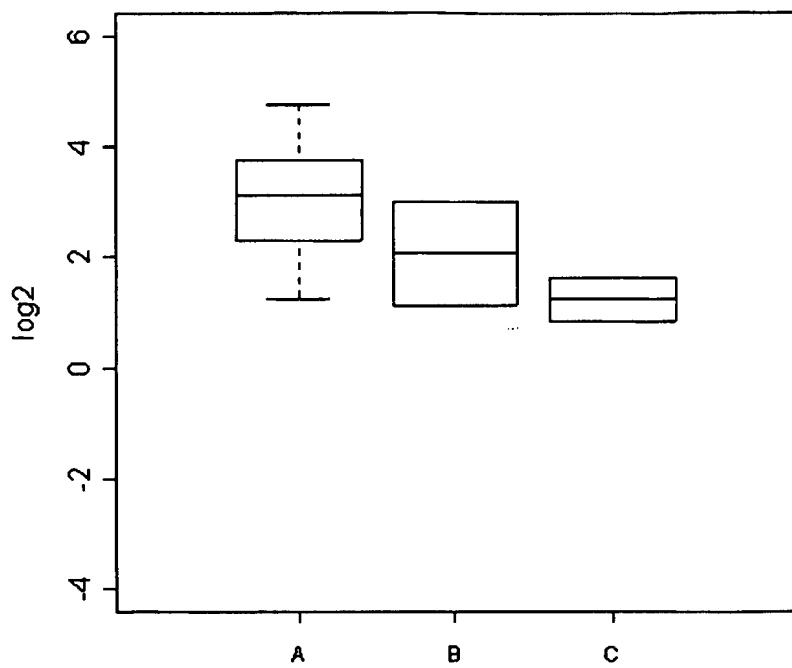
[Fig. 020]



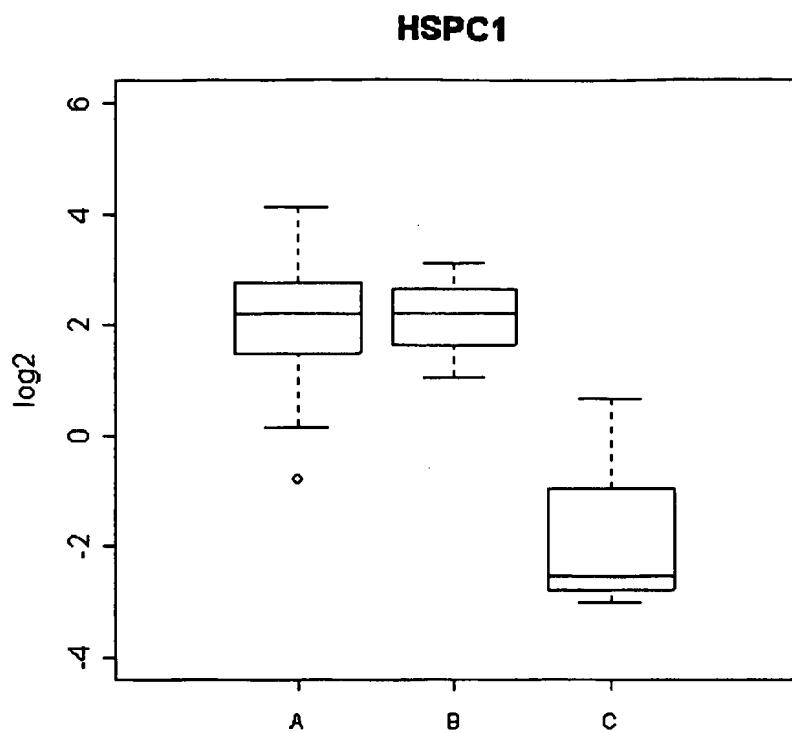
[Fig. 021]



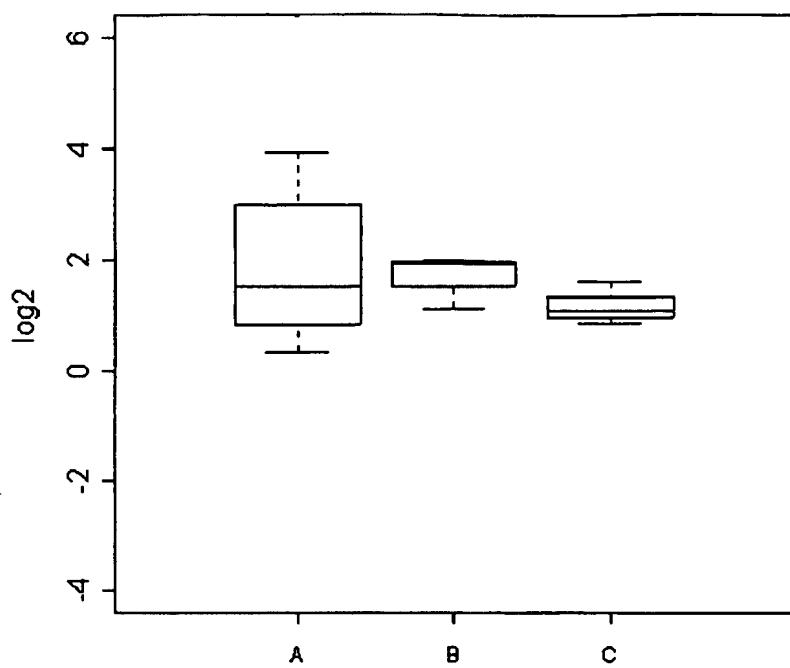
[Fig. 022]

**ARF1**

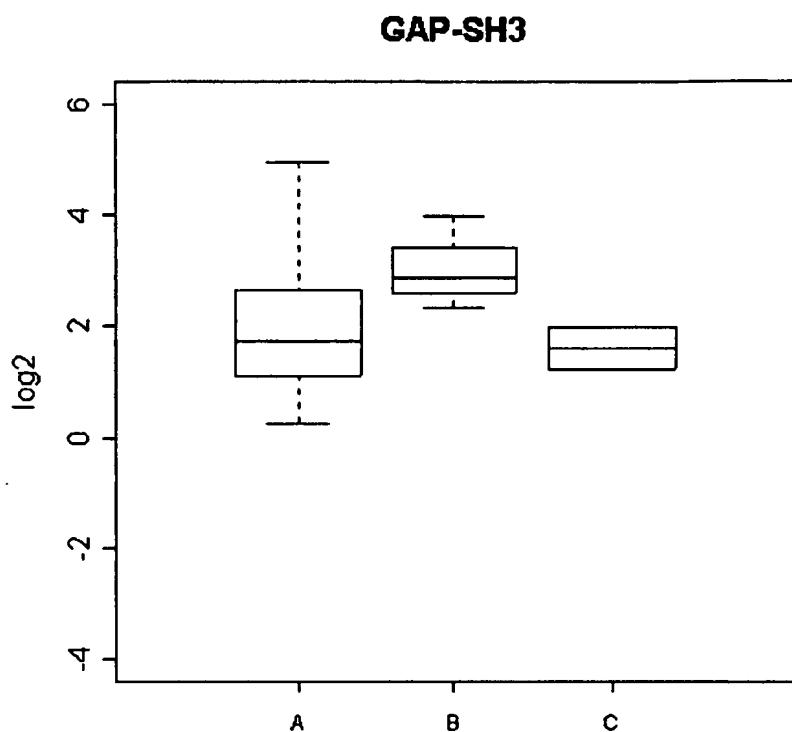
[Fig. 023]



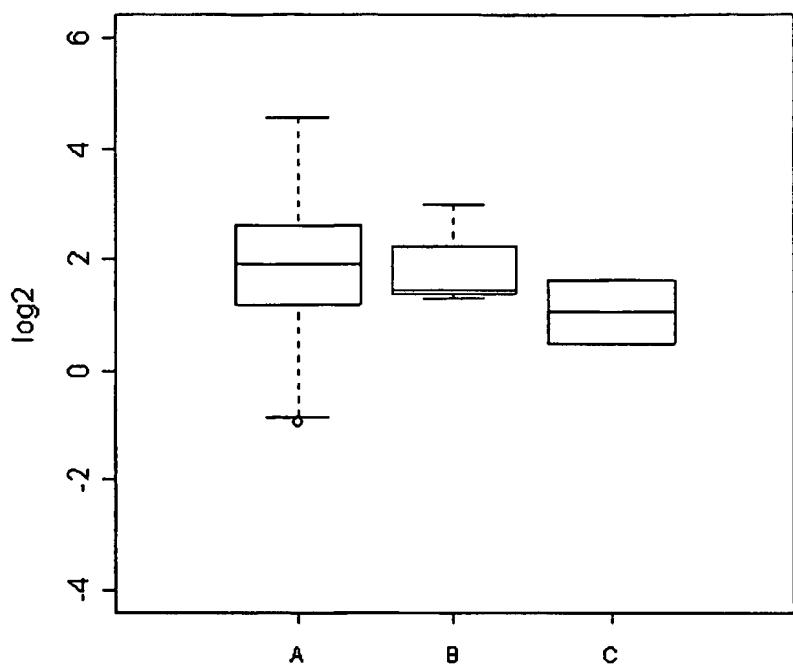
[Fig. 024]

**TLR5**

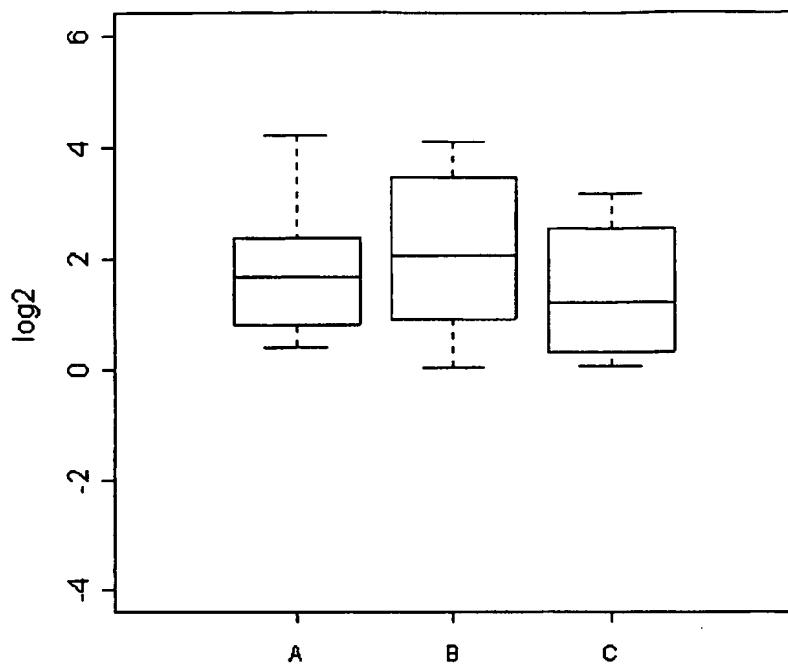
[Fig. 025]



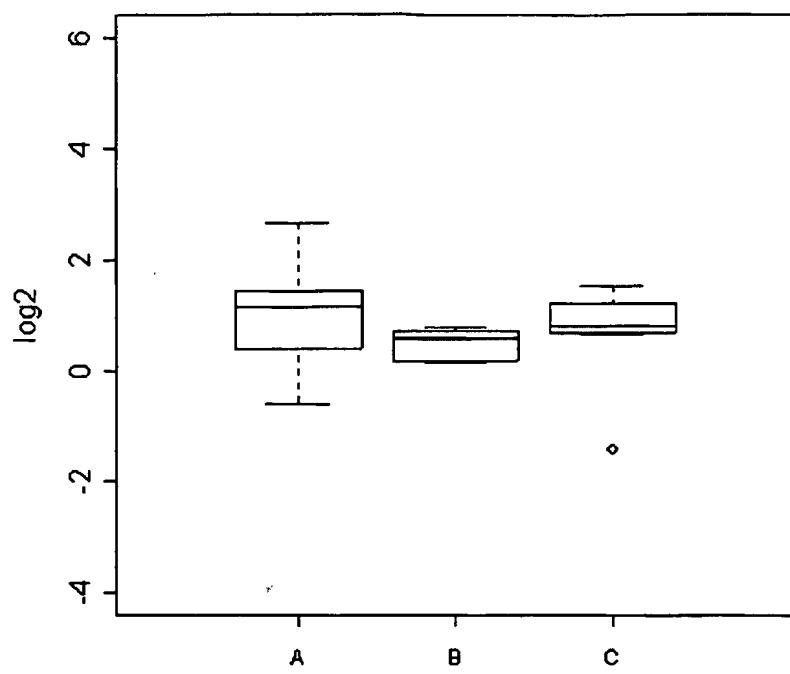
[Fig. 026]

**Crisp-3**

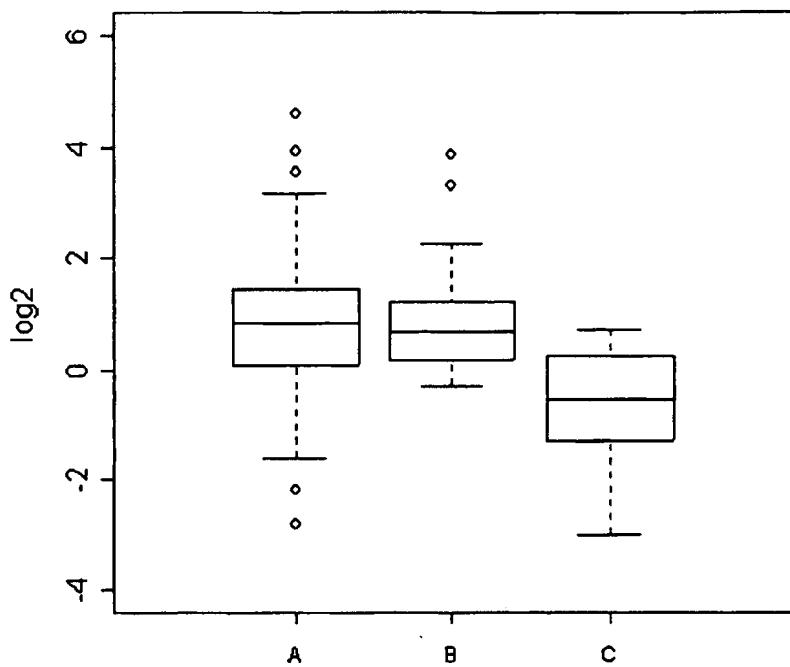
[Fig. 027]

**TM4SF4**

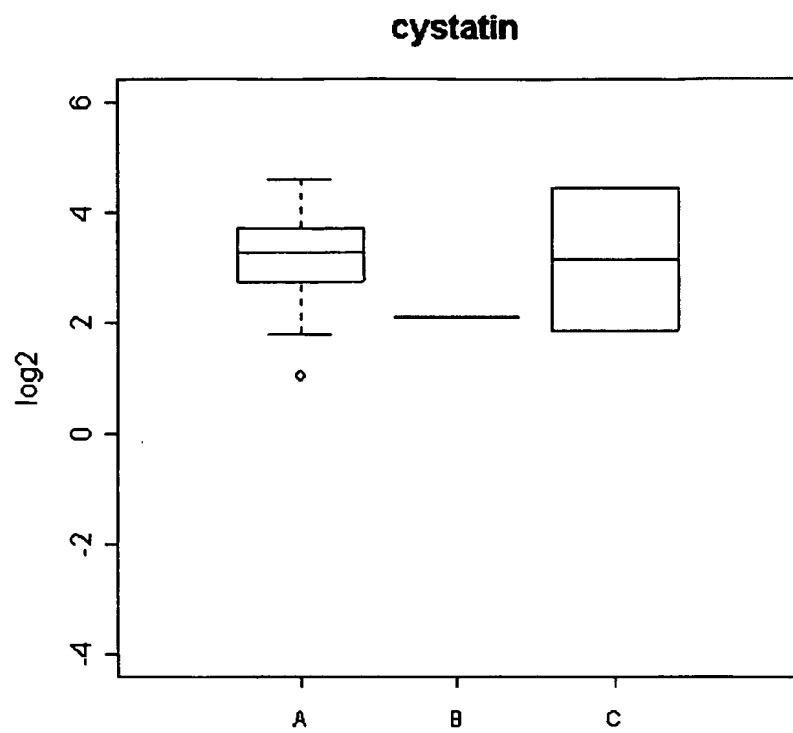
[Fig. 028]

**AQP9**

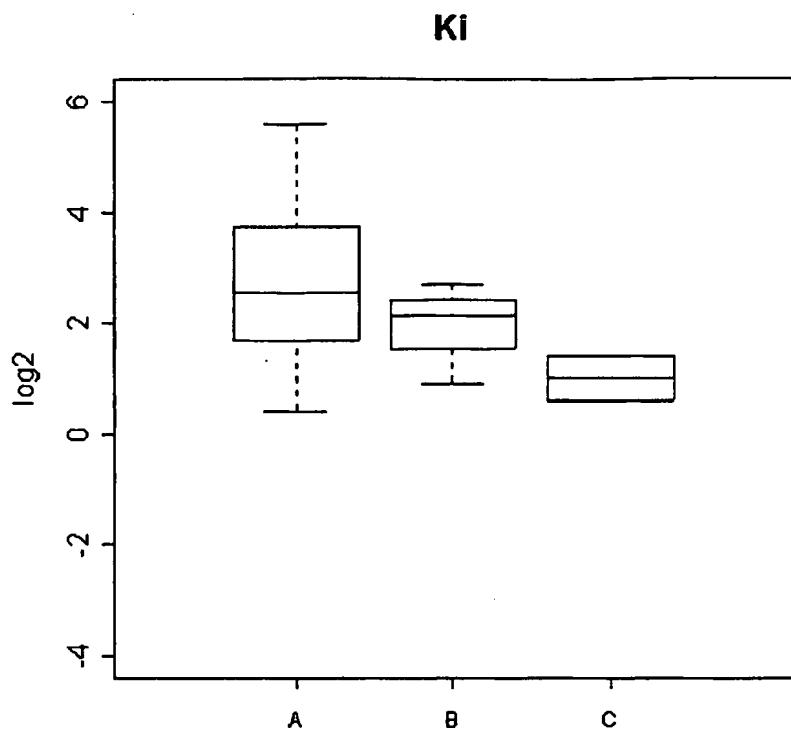
[Fig. 029]

**LOC51716**

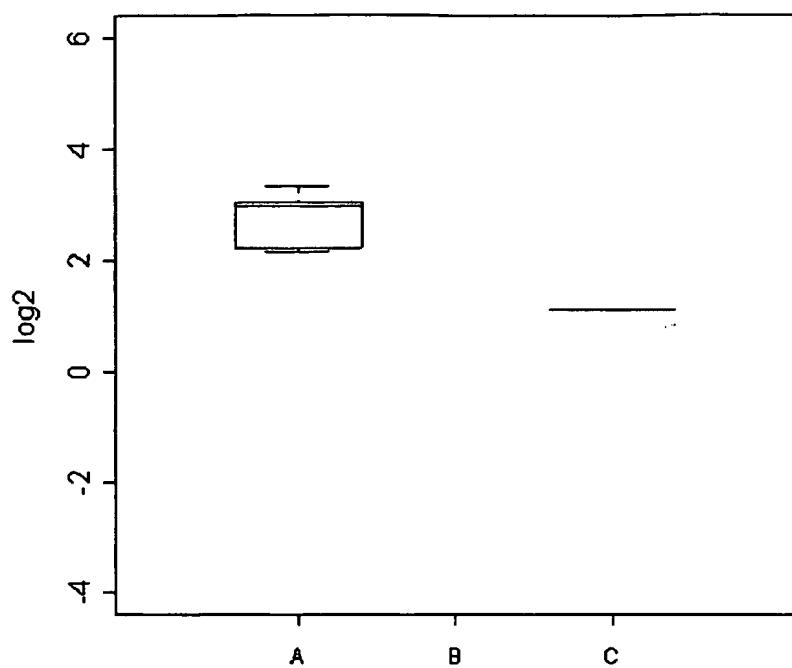
[Fig. 030]



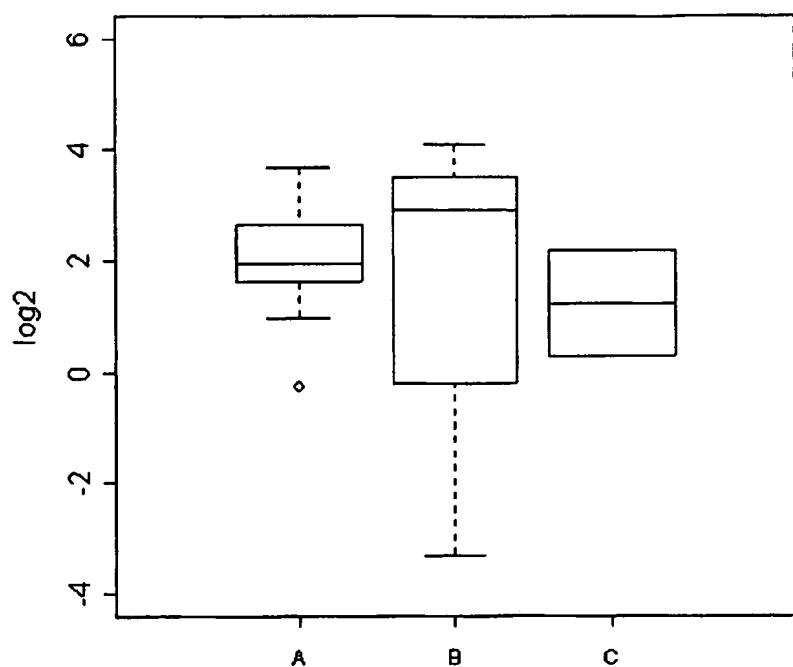
[Fig. 031]



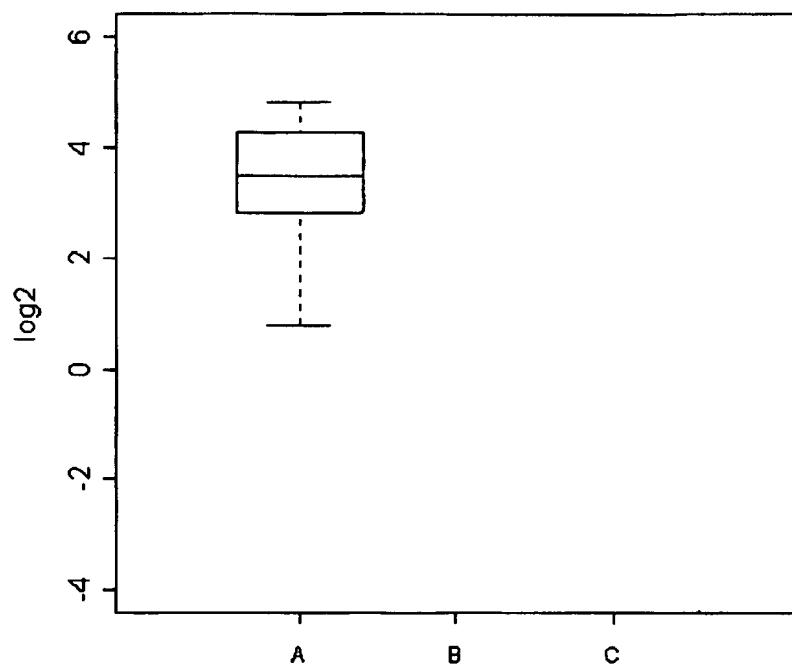
[Fig. 032]

**porimin**

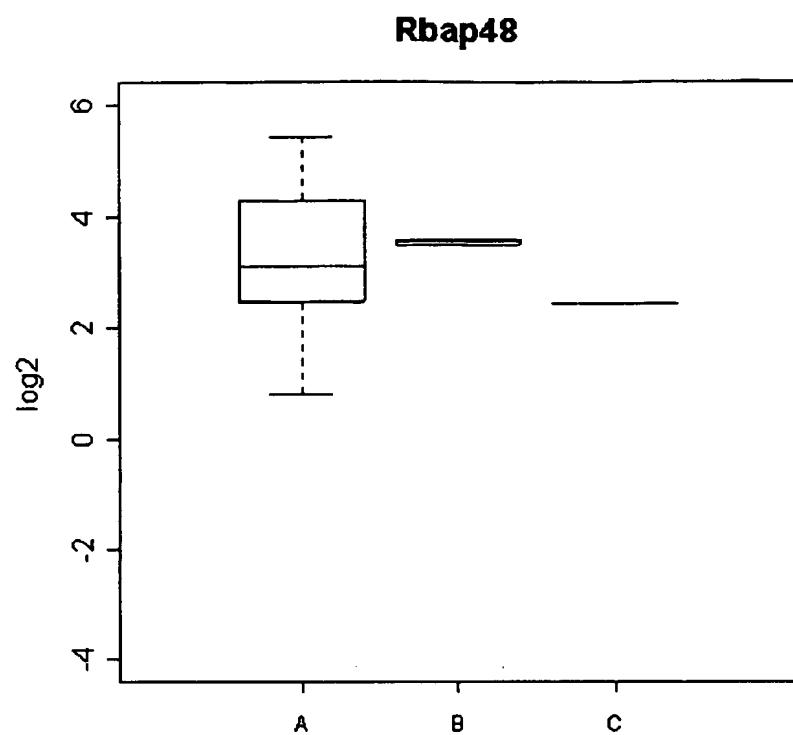
[Fig. 033]

**PTPRZ1**

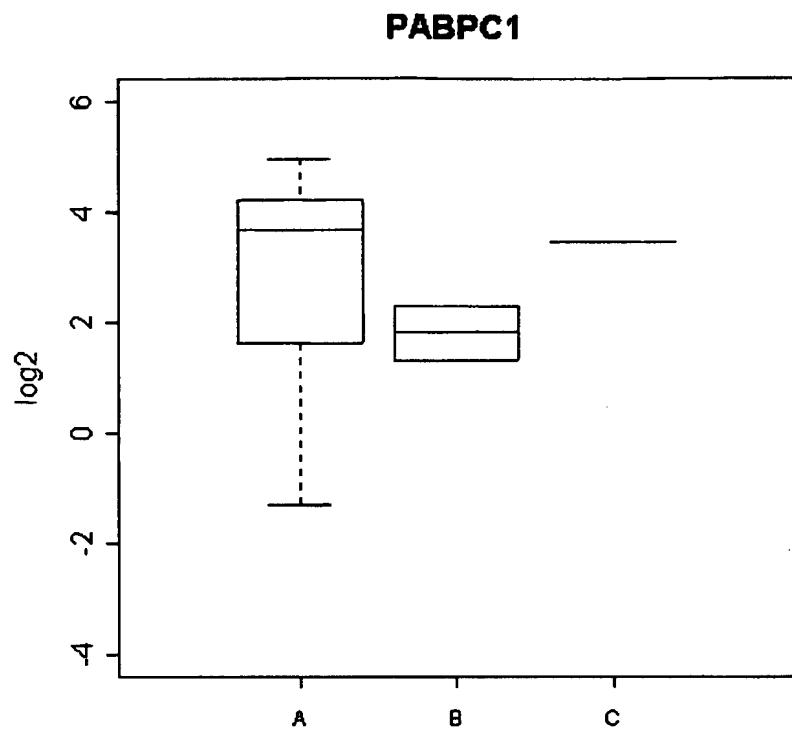
[Fig. 034]

**Rab9 effector of p40**

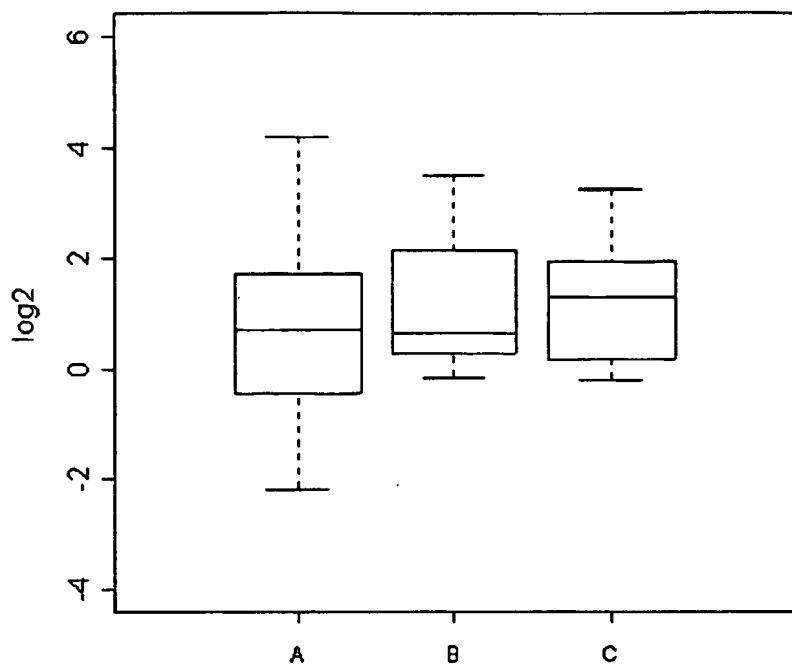
[Fig. 035]



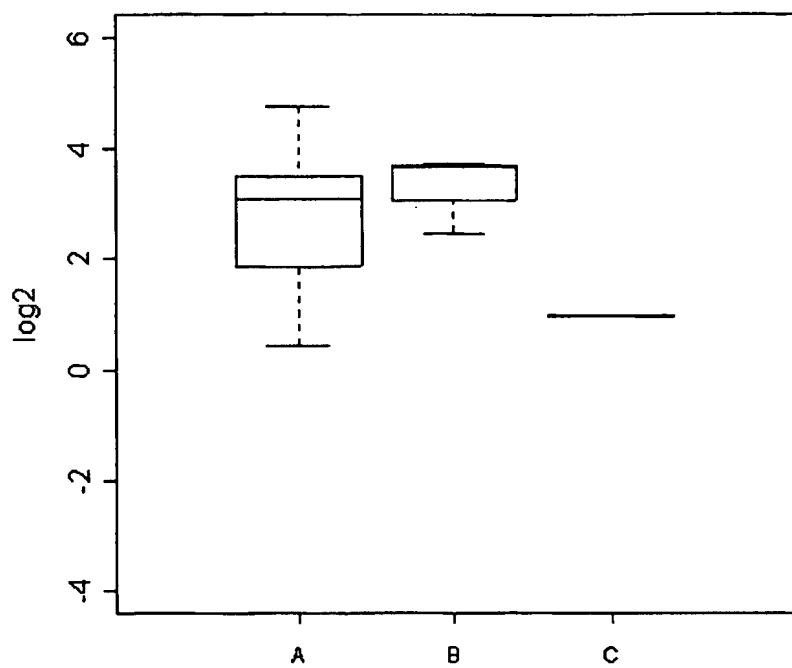
[Fig. 036]



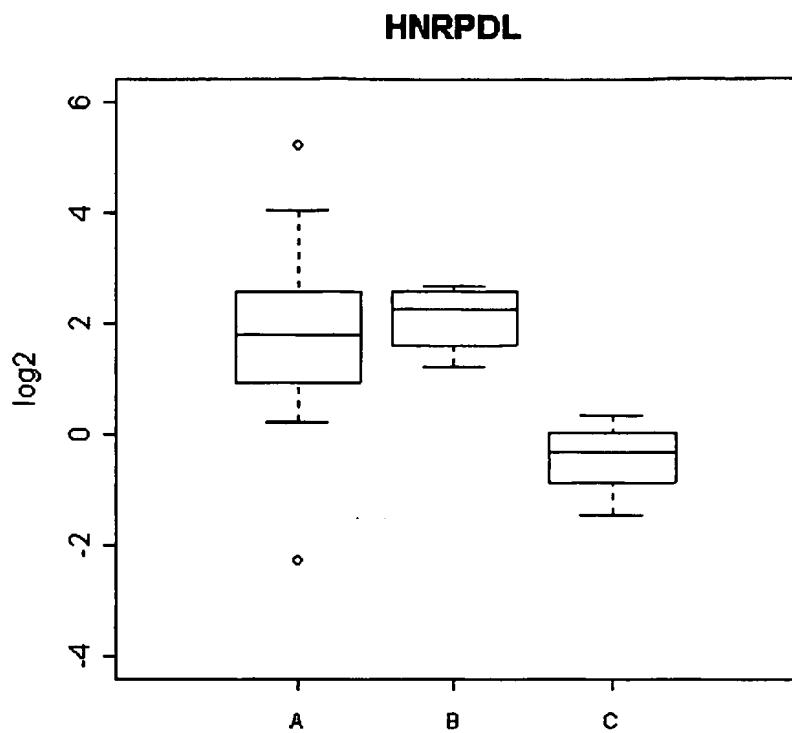
[Fig. 037]

**NF1/B2**

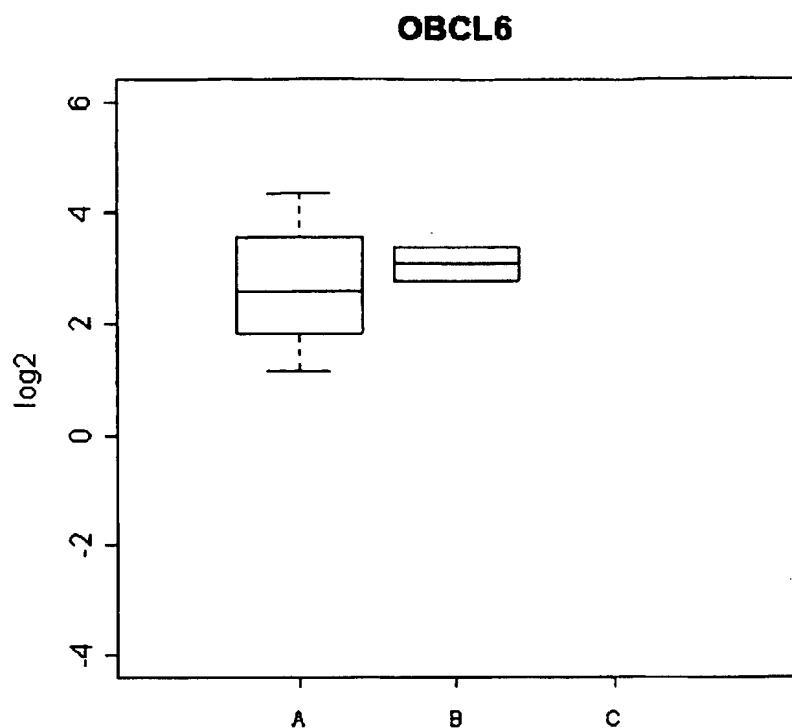
[Fig. 038]

**RPL7**

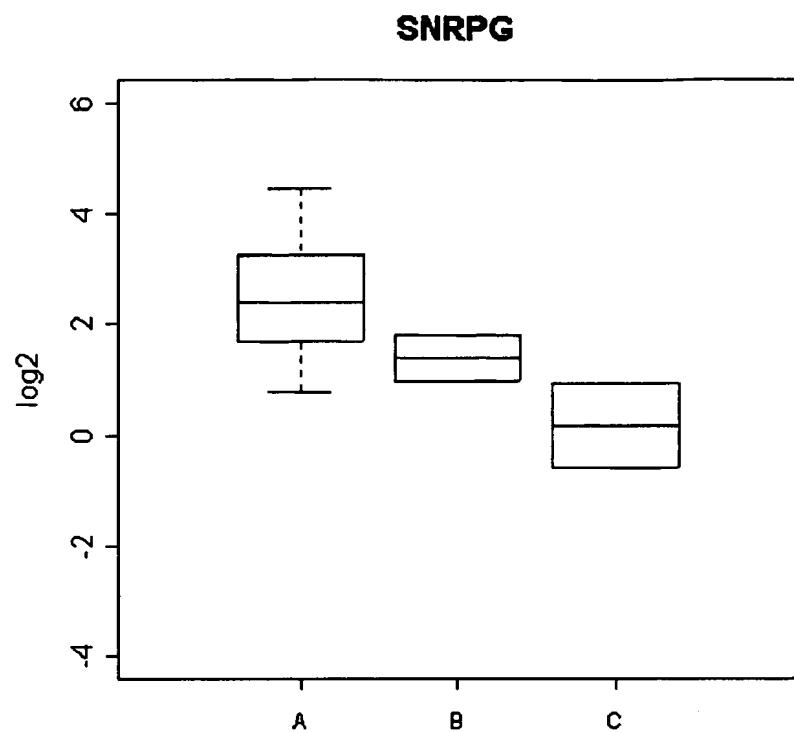
[Fig. 039]



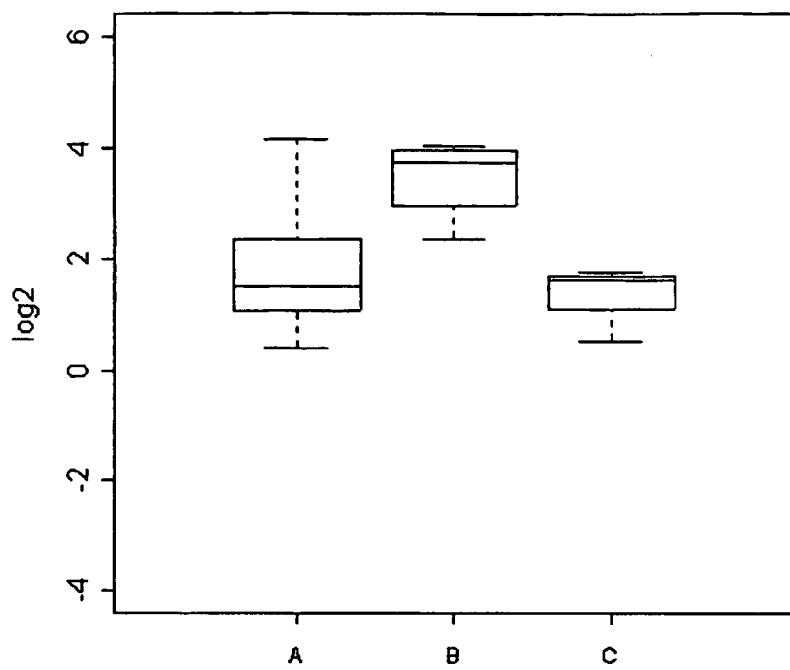
[Fig. 040]



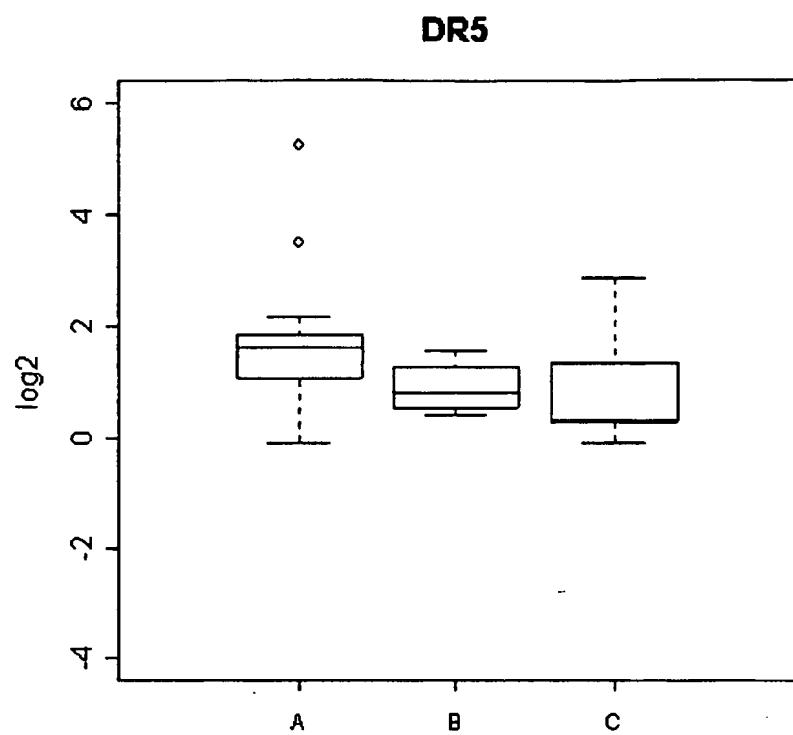
[Fig. 041]



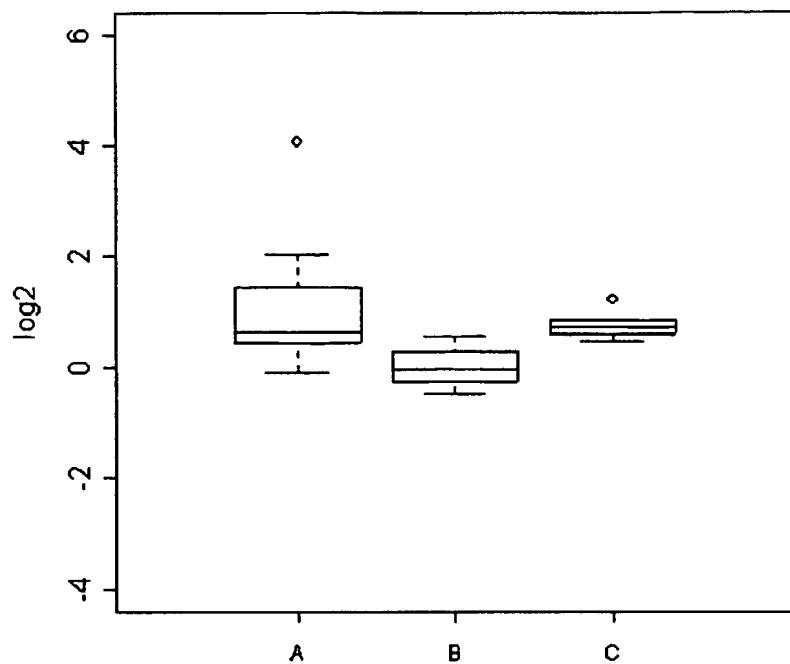
[Fig. 042]

**KREV-1**

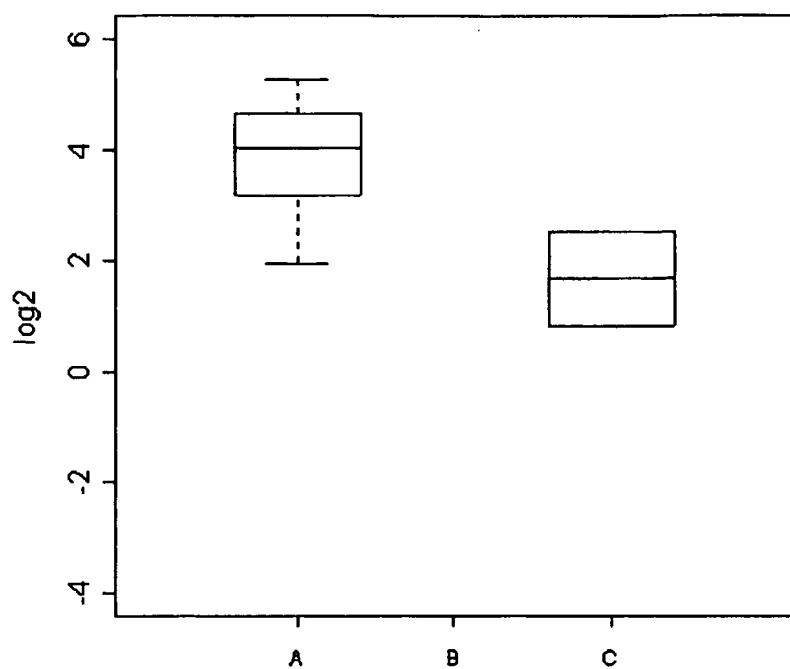
[Fig. 043]



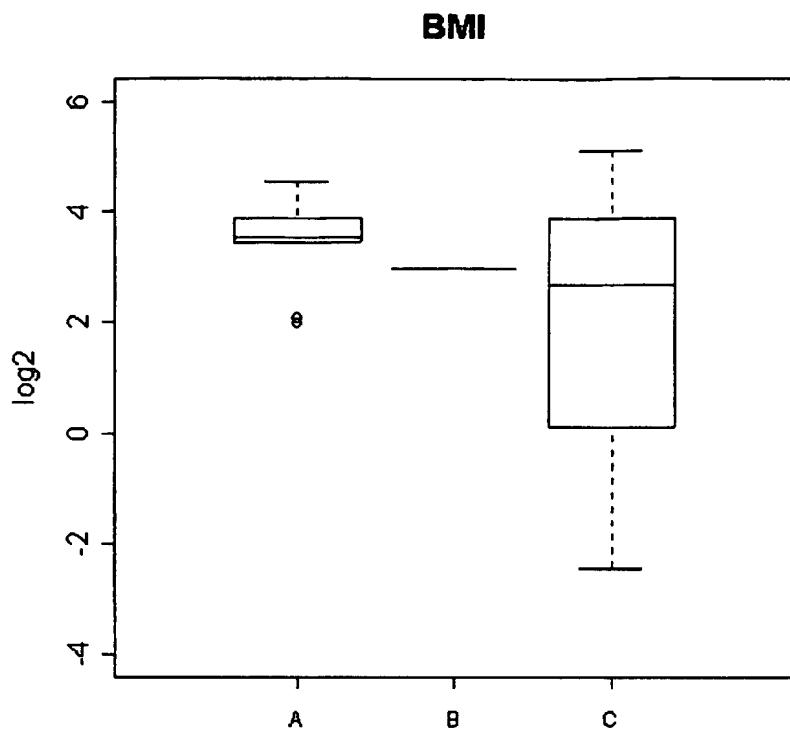
[Fig. 044]

**PKCI-1**

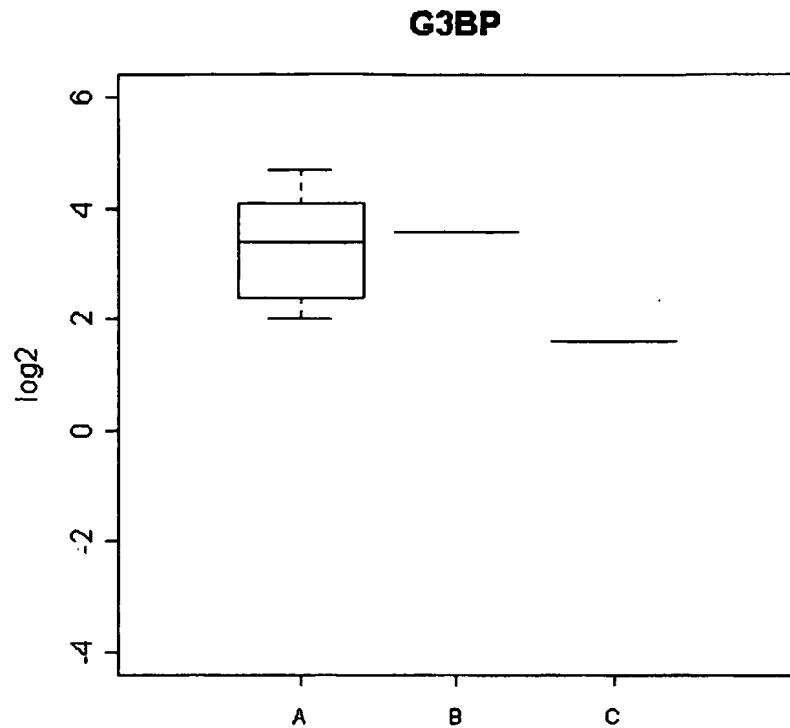
[Fig. 045]

**IMPACT**

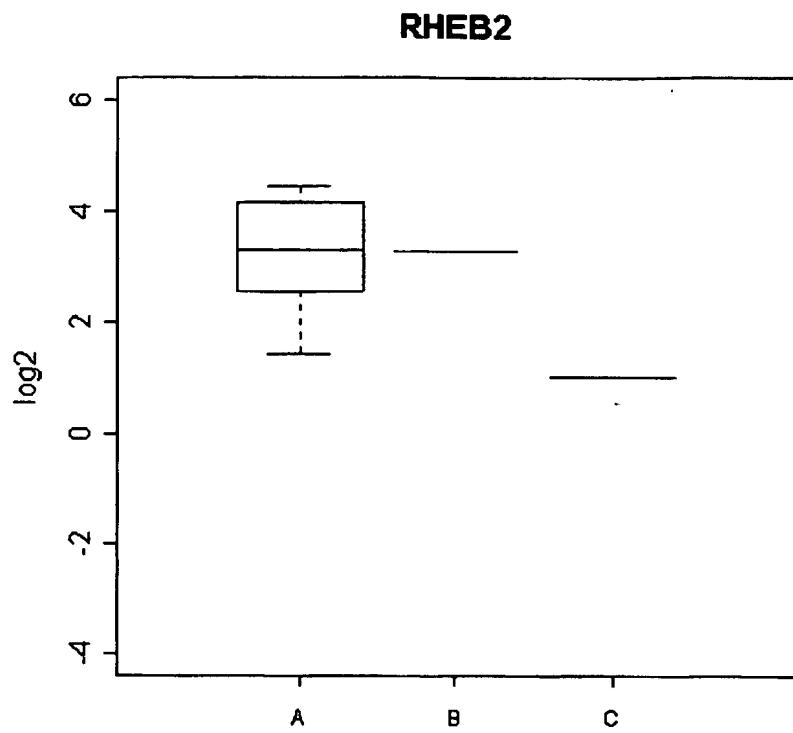
[Fig. 046]



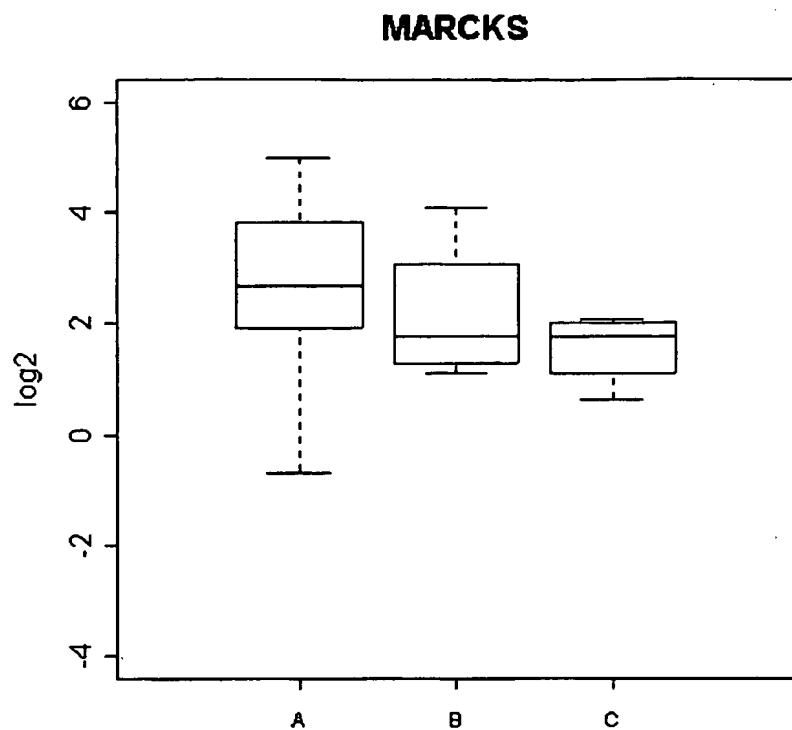
[Fig. 047]



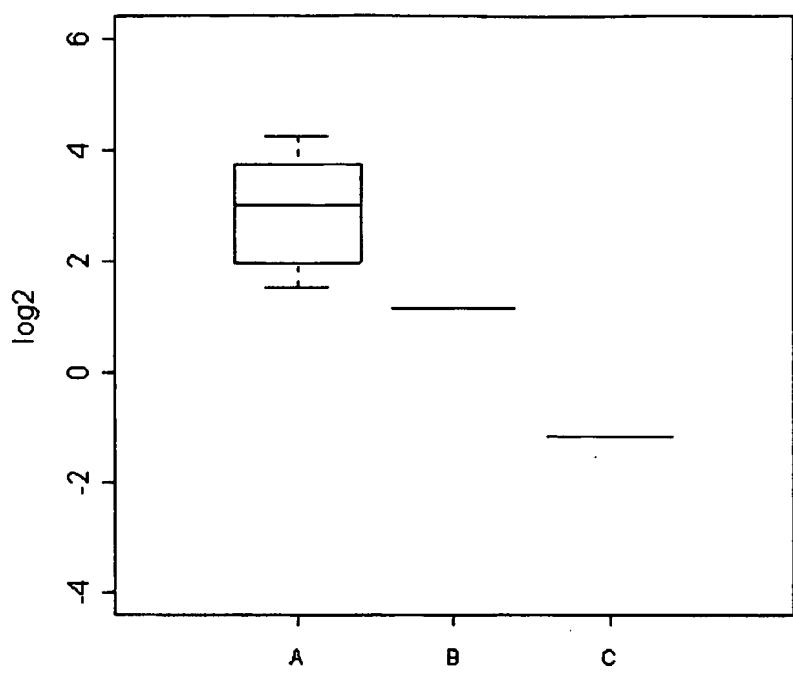
[Fig. 048]



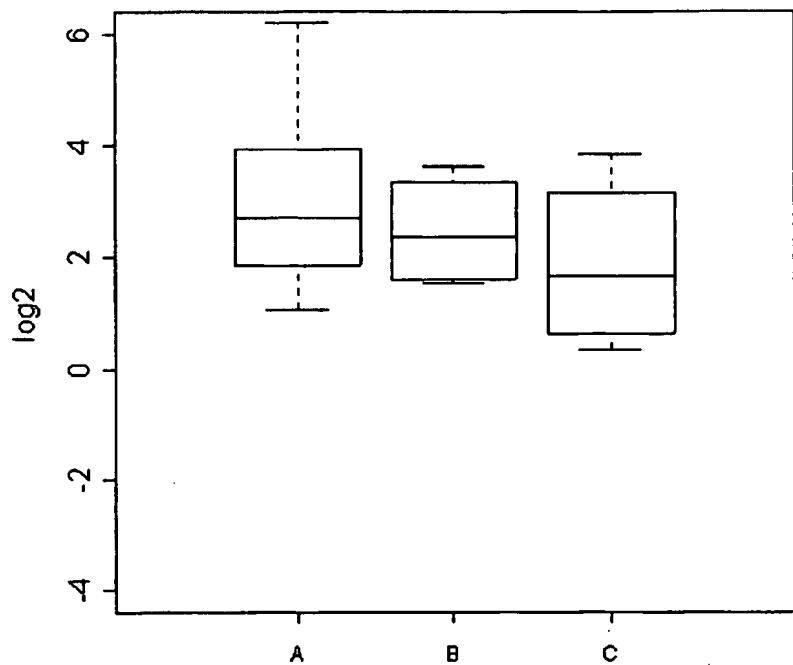
[Fig. 049]



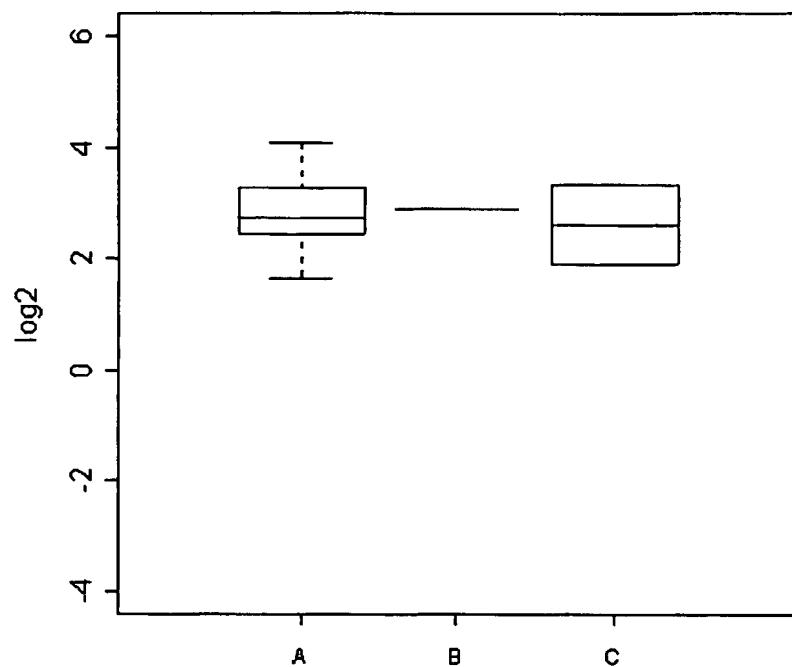
[Fig. 050]

**ALURBP**

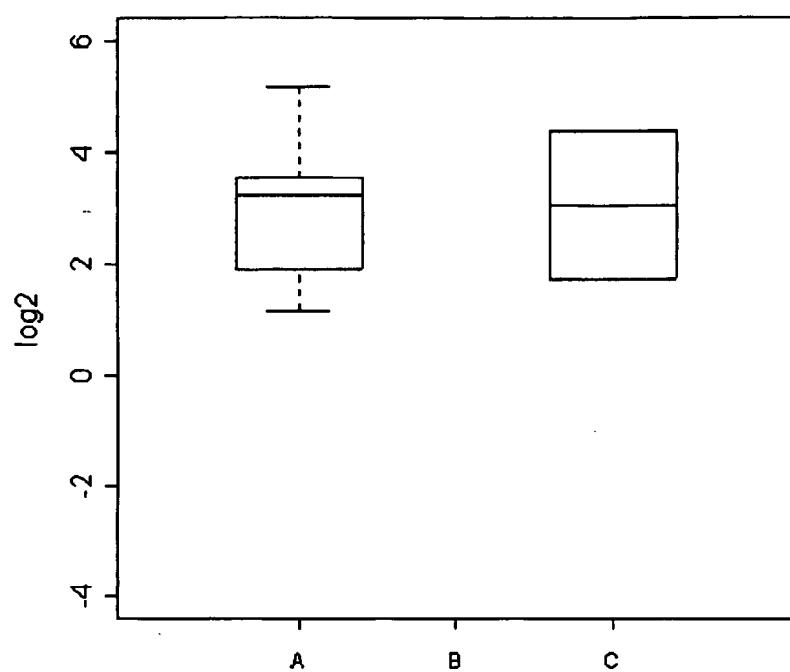
[Fig. 051]

**PPGB**

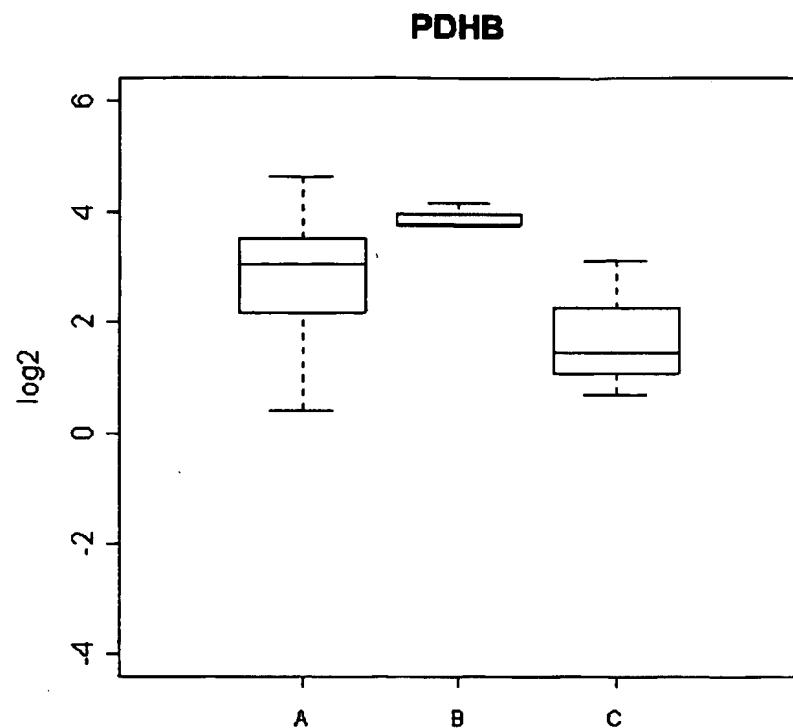
[Fig. 052]

**GRB2**

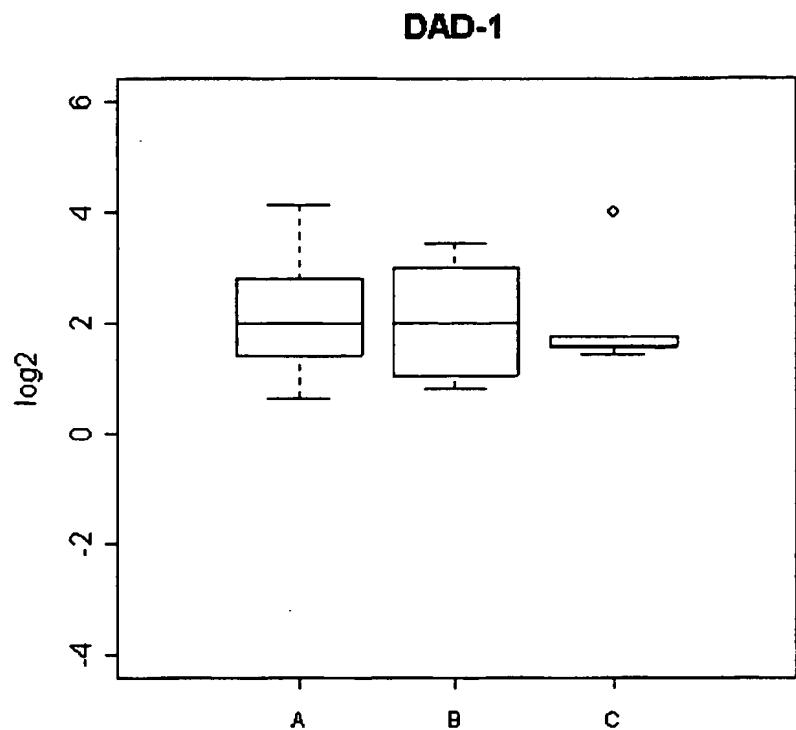
[Fig. 053]

**TRAP1**

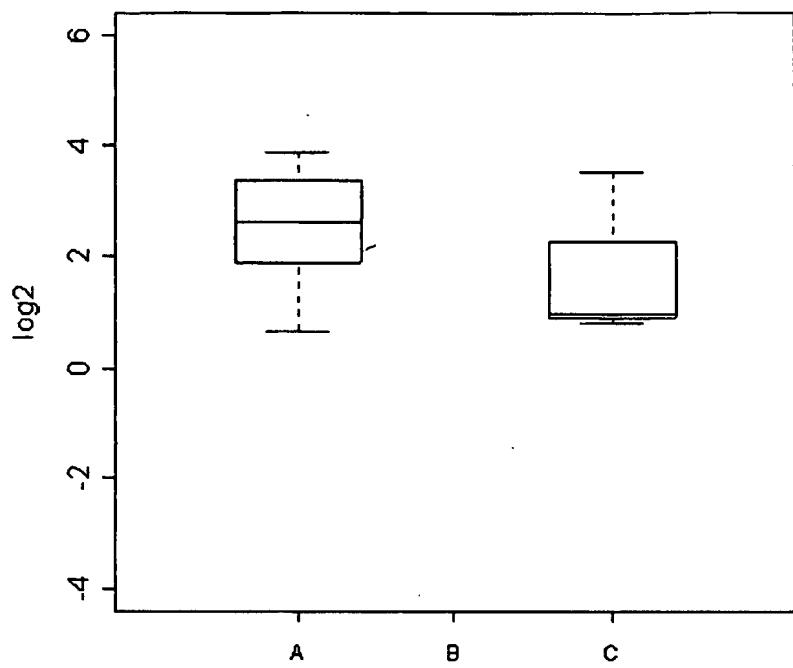
[Fig. 054]



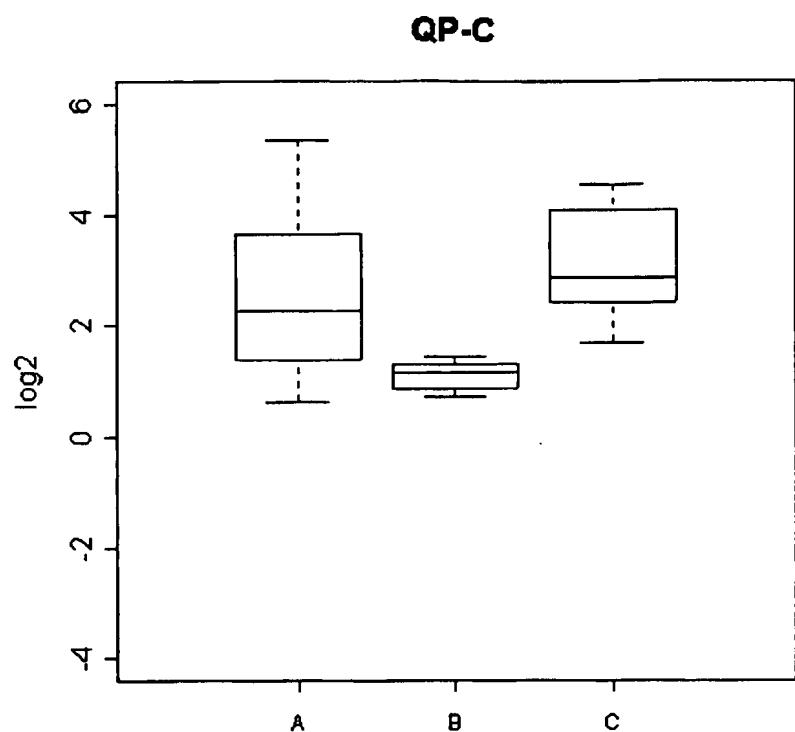
[Fig. 055]



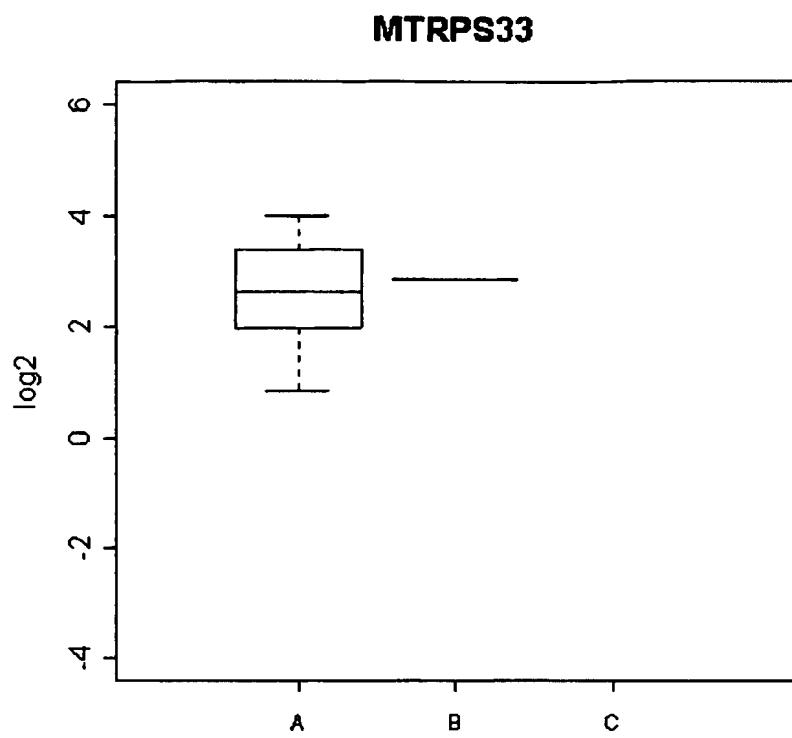
[Fig. 056]

**PSME2**

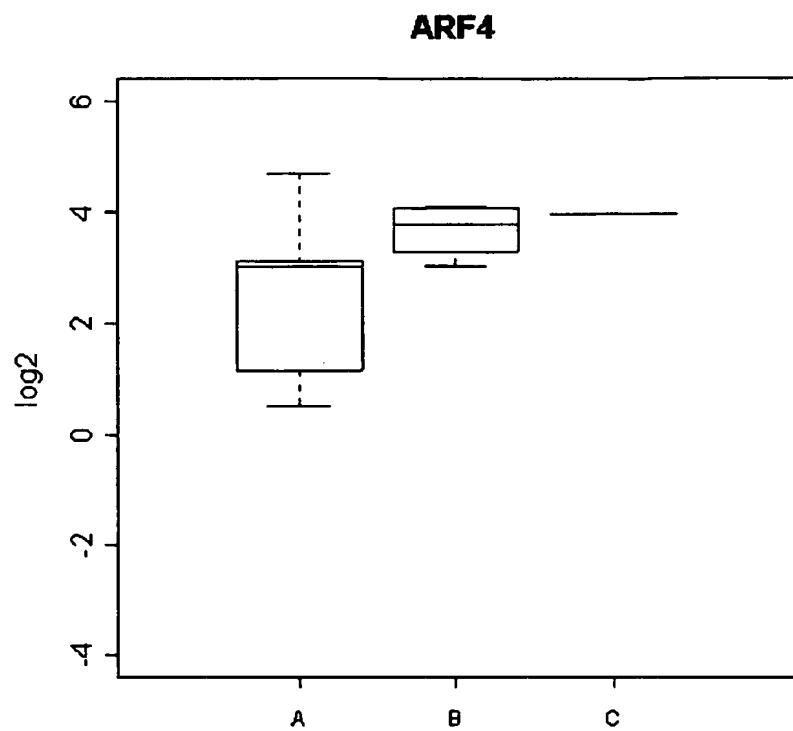
[Fig. 057]



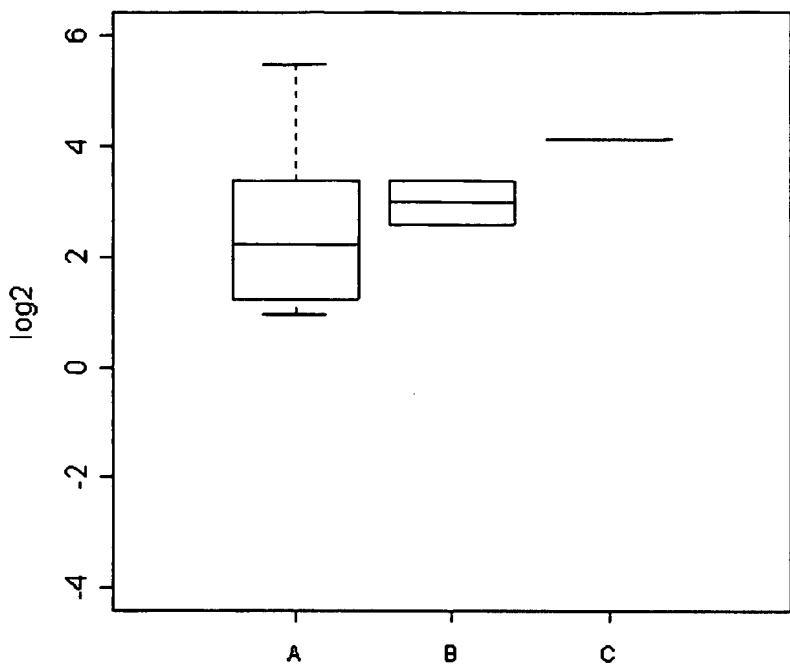
[Fig. 058]



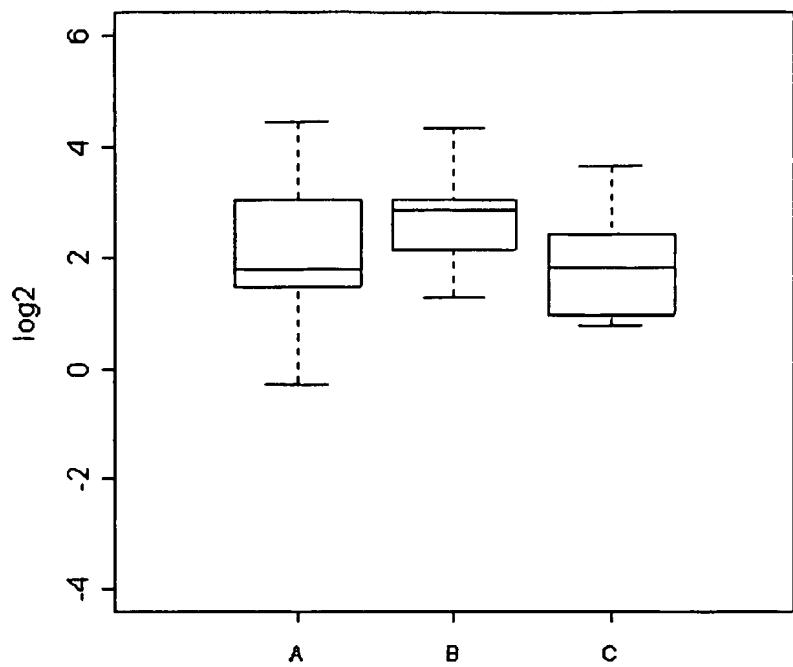
[Fig. 059]



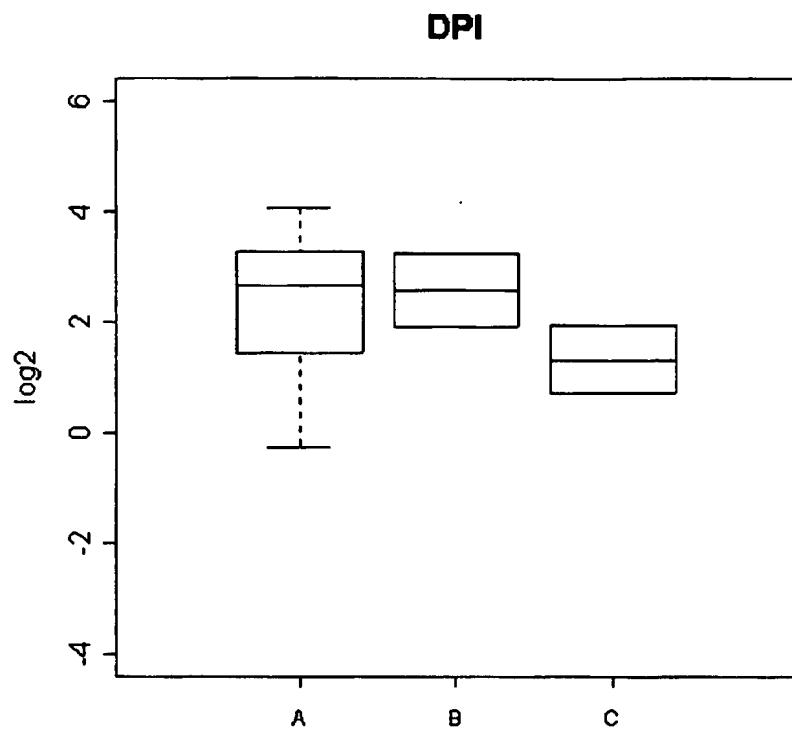
[Fig. 060]

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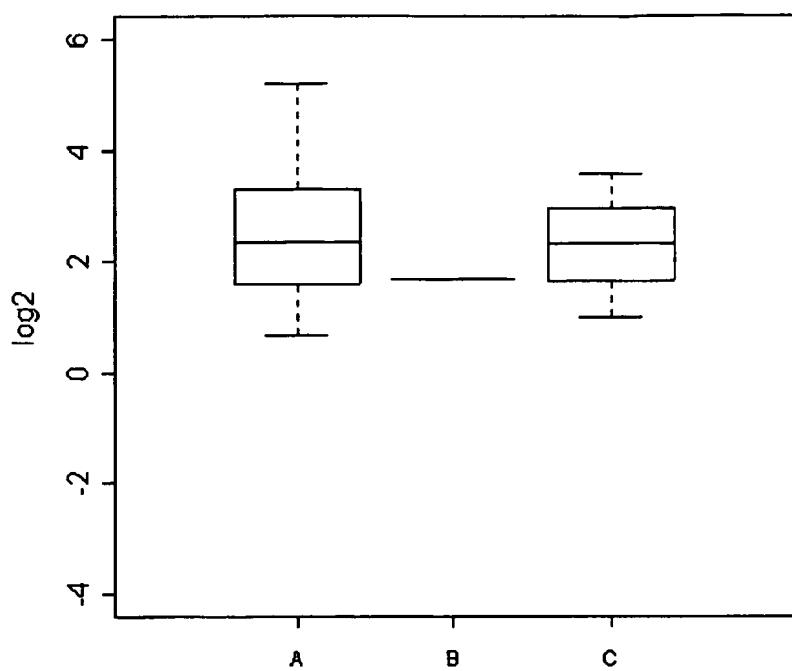
[Fig. 061]

**GNG10**

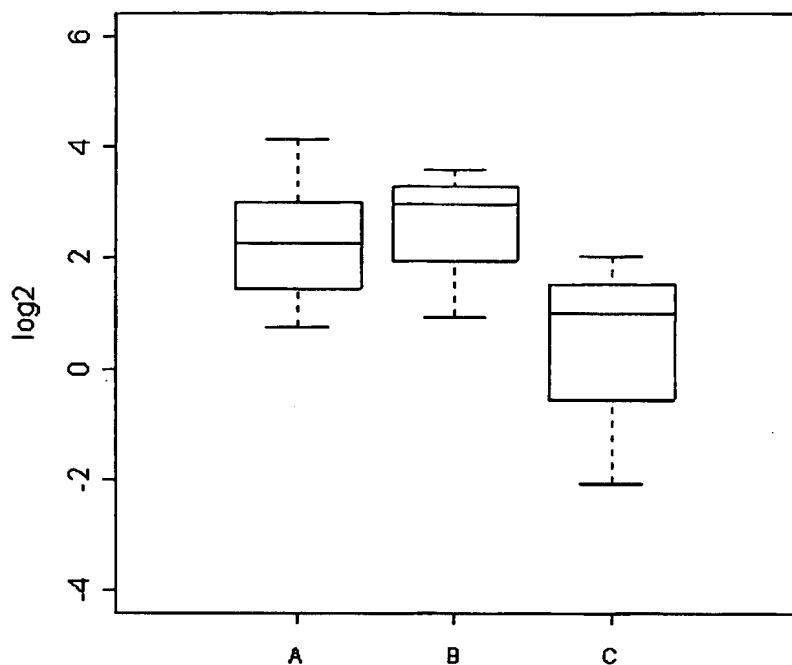
[Fig. 062]



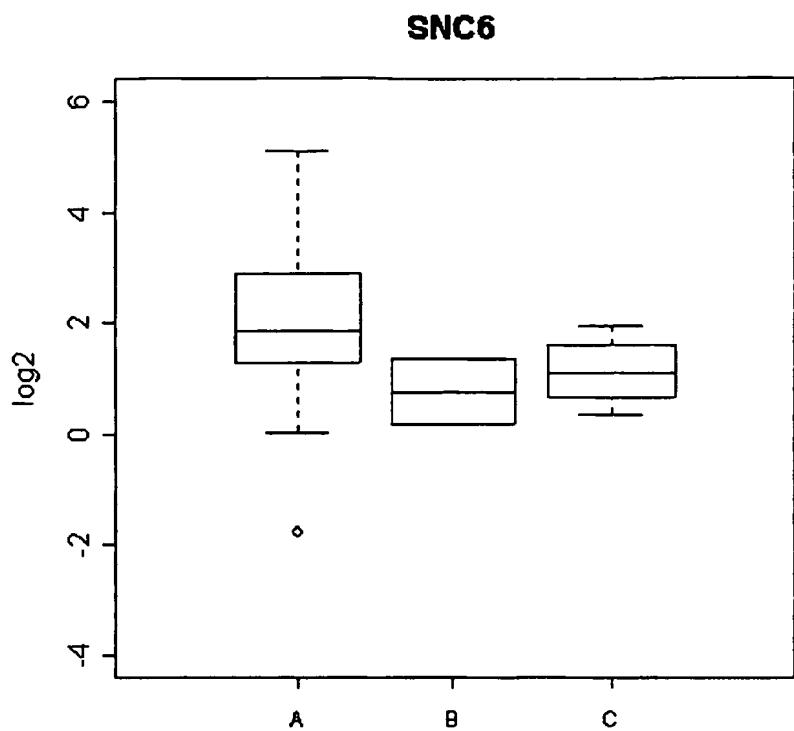
[Fig. 063]

**ATP1B1**

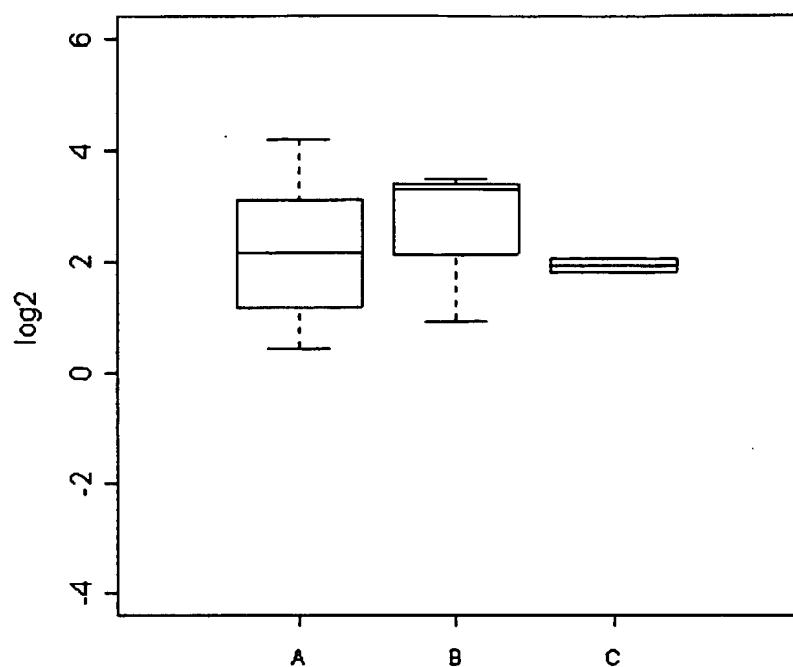
[Fig. 064]

**SLC25A3**

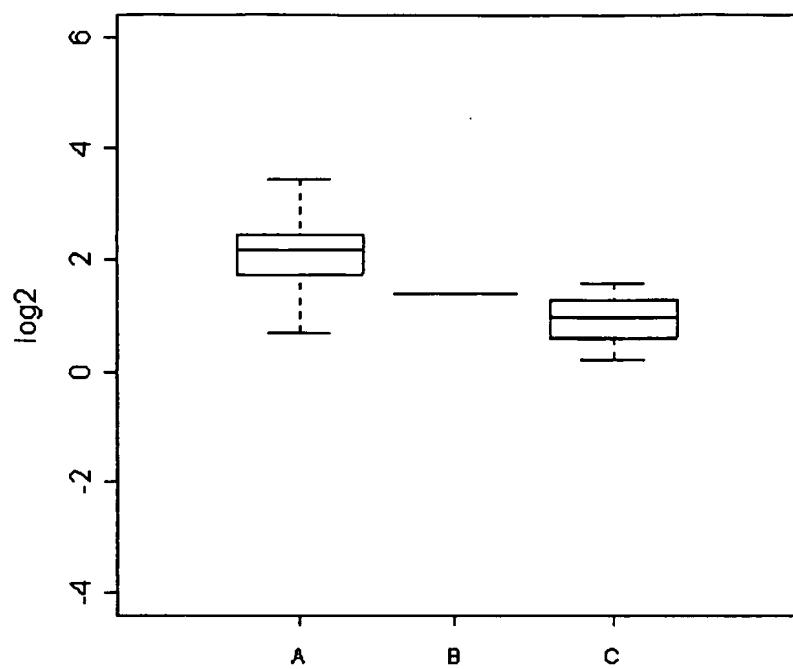
[Fig. 065]



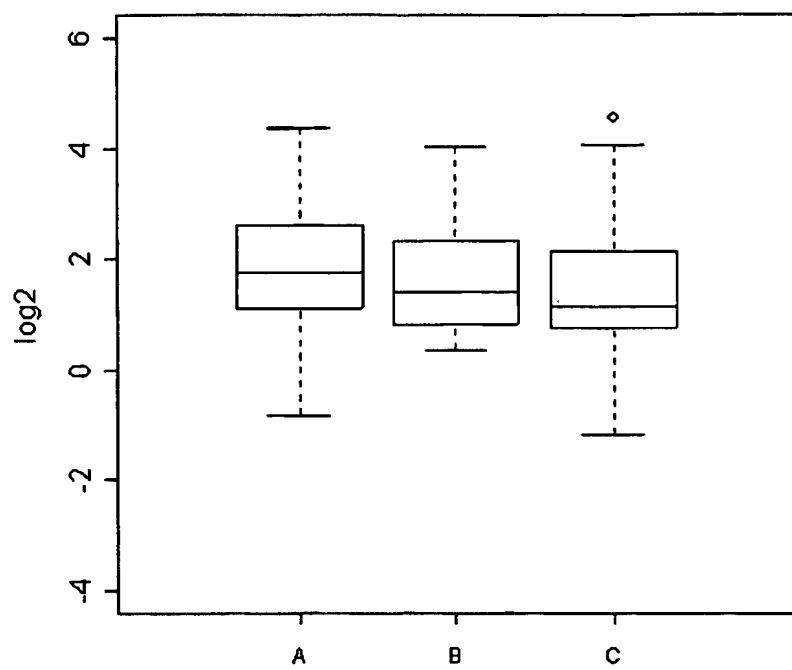
[Fig. 066]

**OMG**

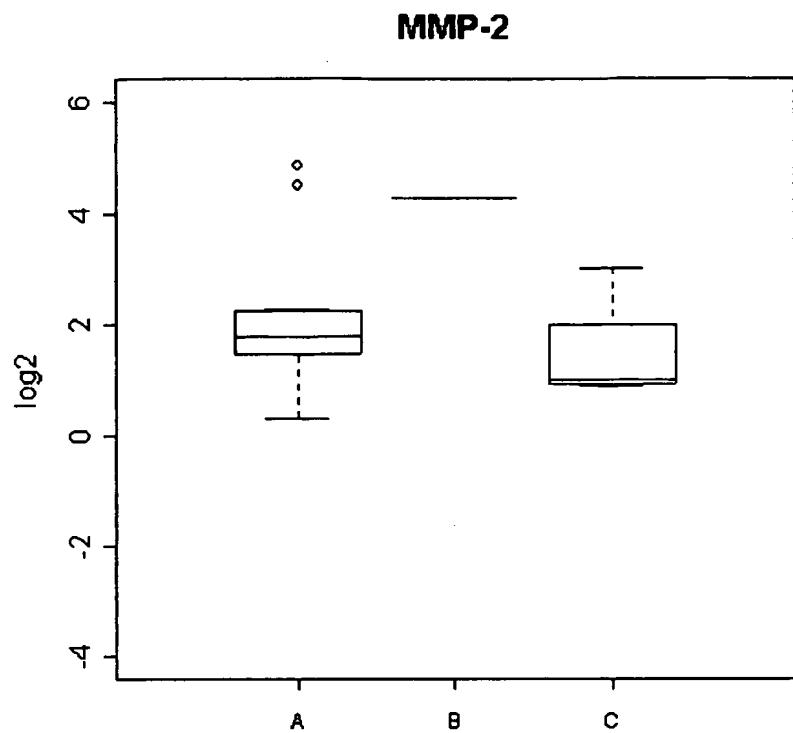
[Fig. 067]

**PB1S**

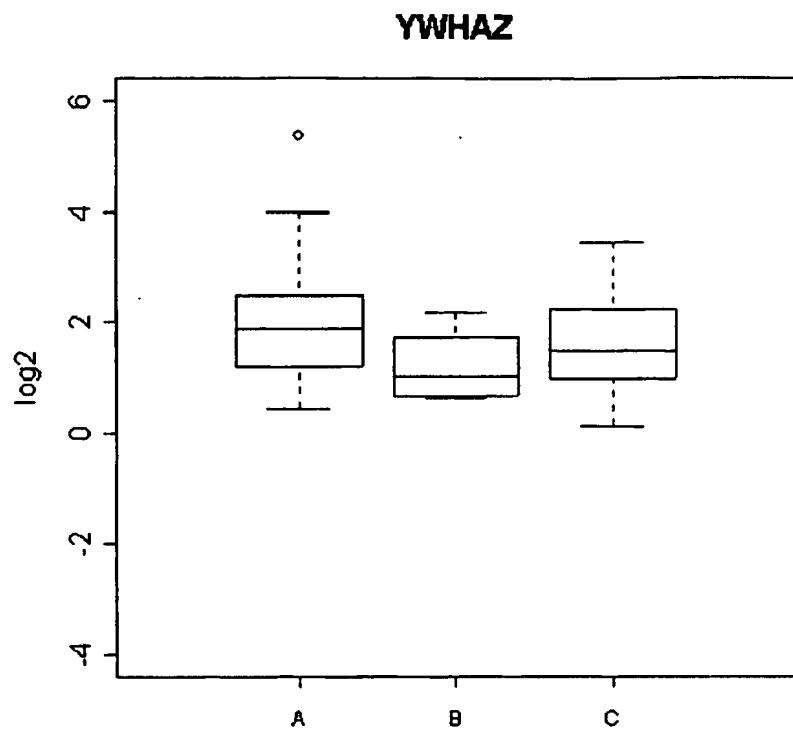
[Fig. 068]

**RPS21**

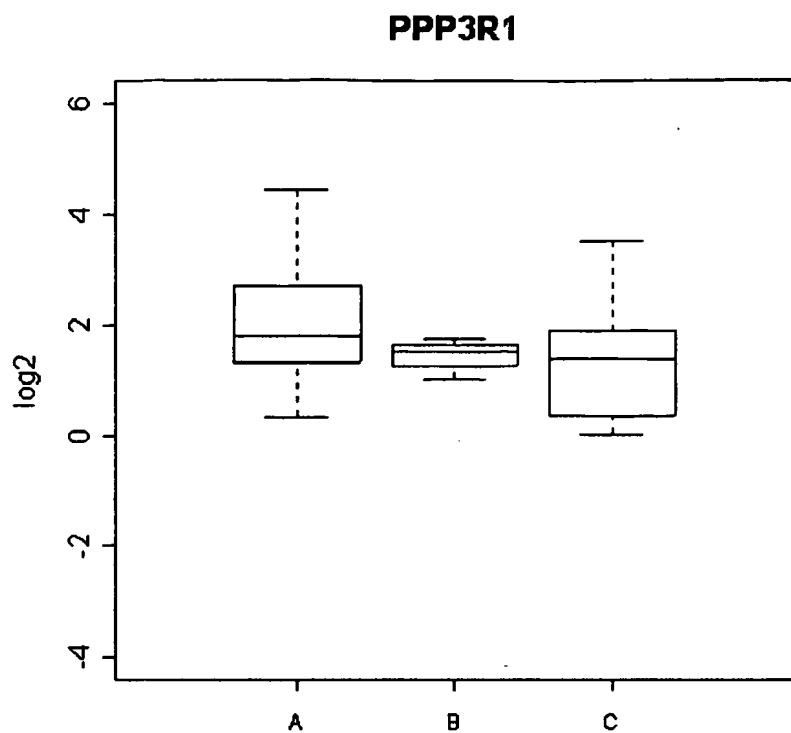
[Fig. 069]



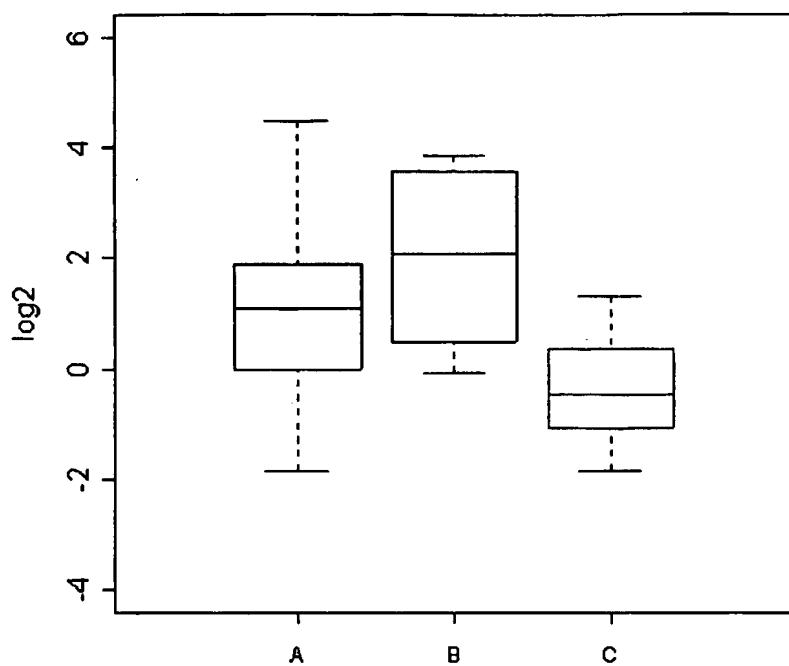
[Fig. 070]



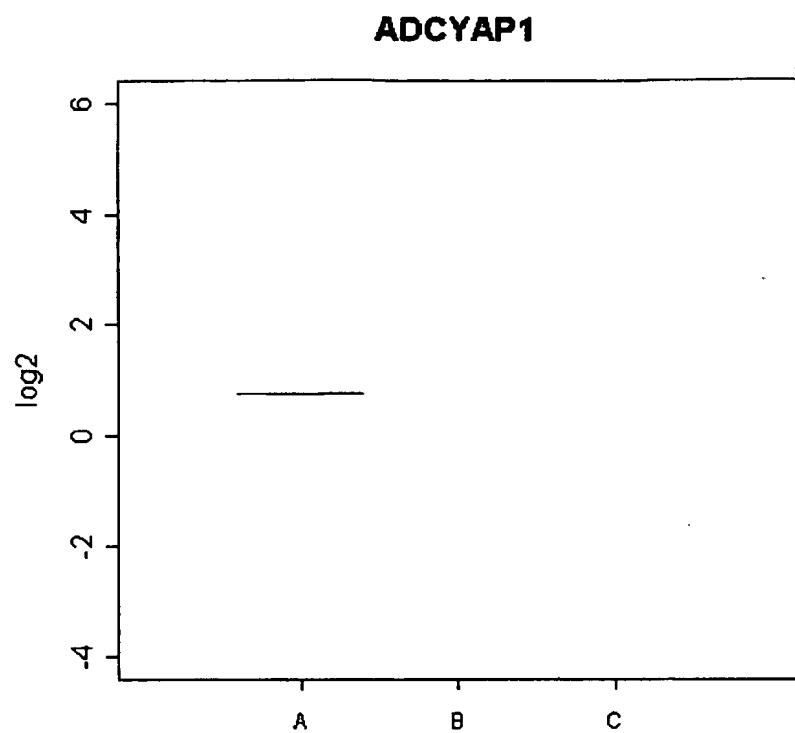
[Fig. 071]



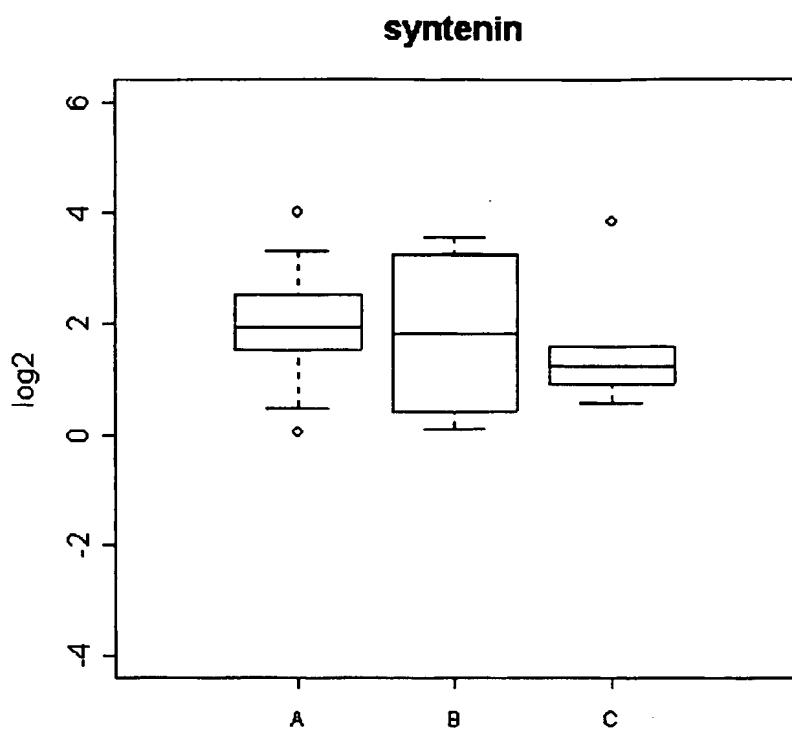
[Fig. 072]

**CTNNA1**

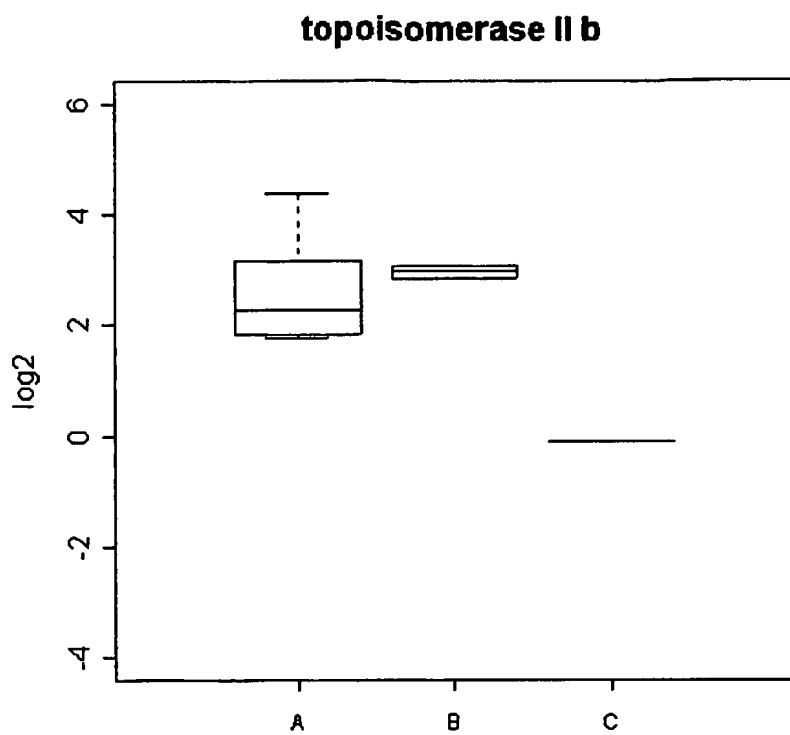
[Fig. 073]



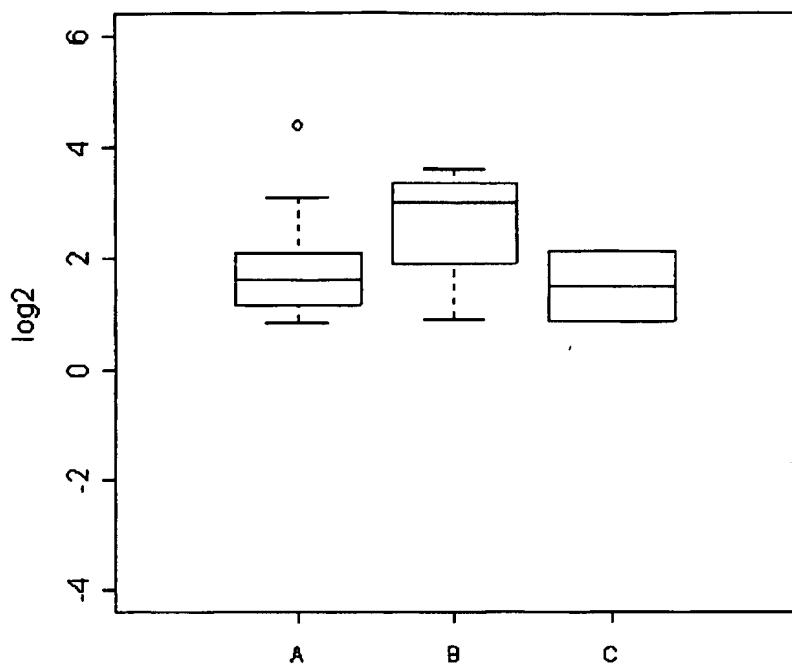
[Fig. 074]



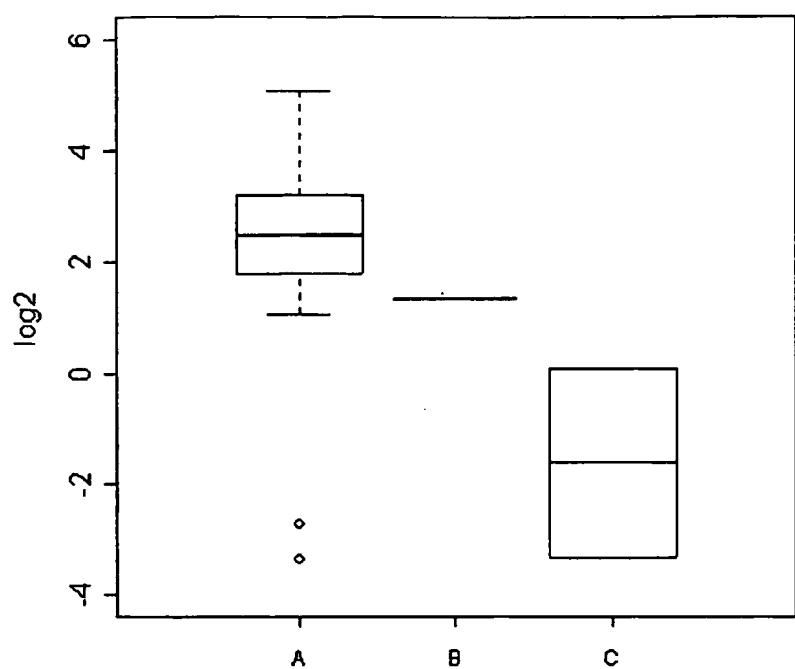
[Fig. 075]



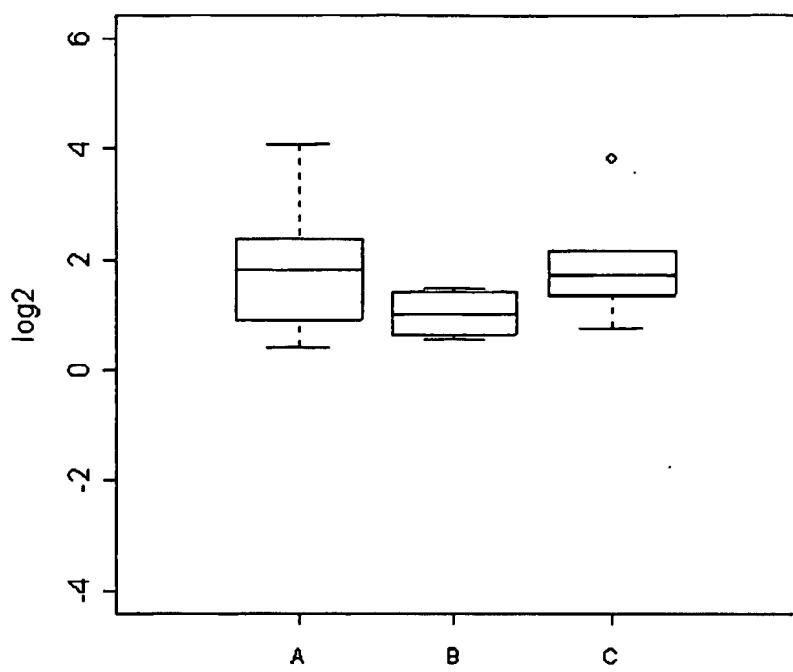
[Fig. 076]

**UMP-CMPK**

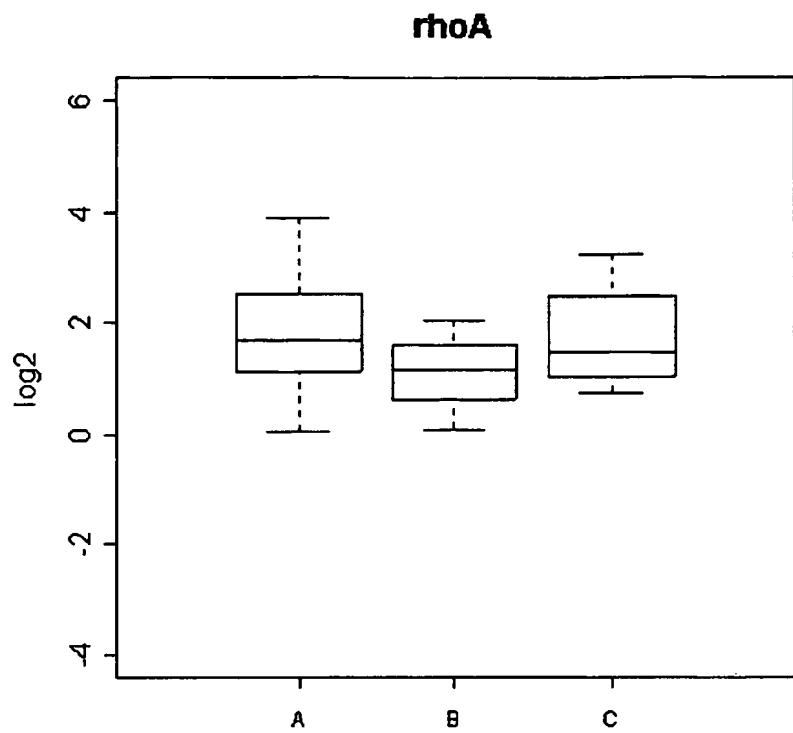
[Fig. 077]

**PSMD4**

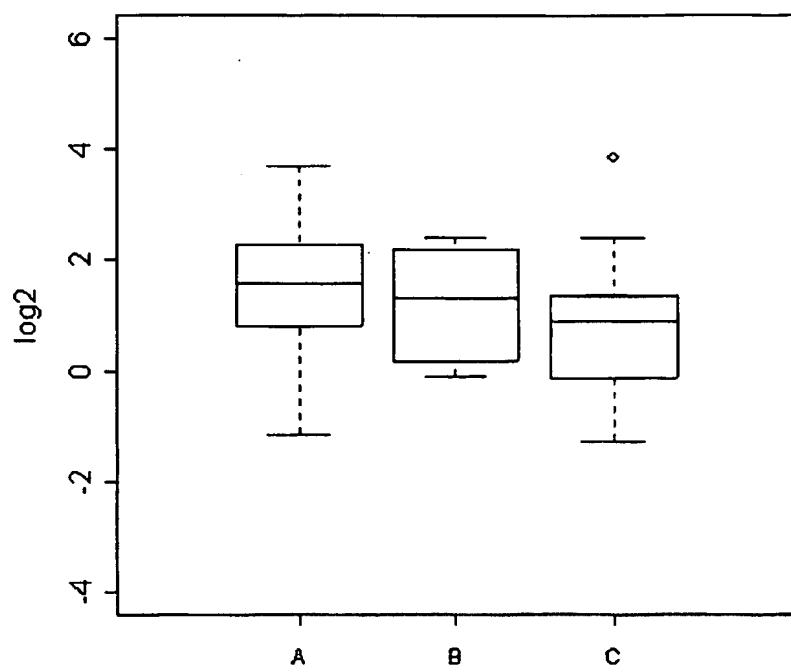
[Fig. 078]

**hu\_BTF3**

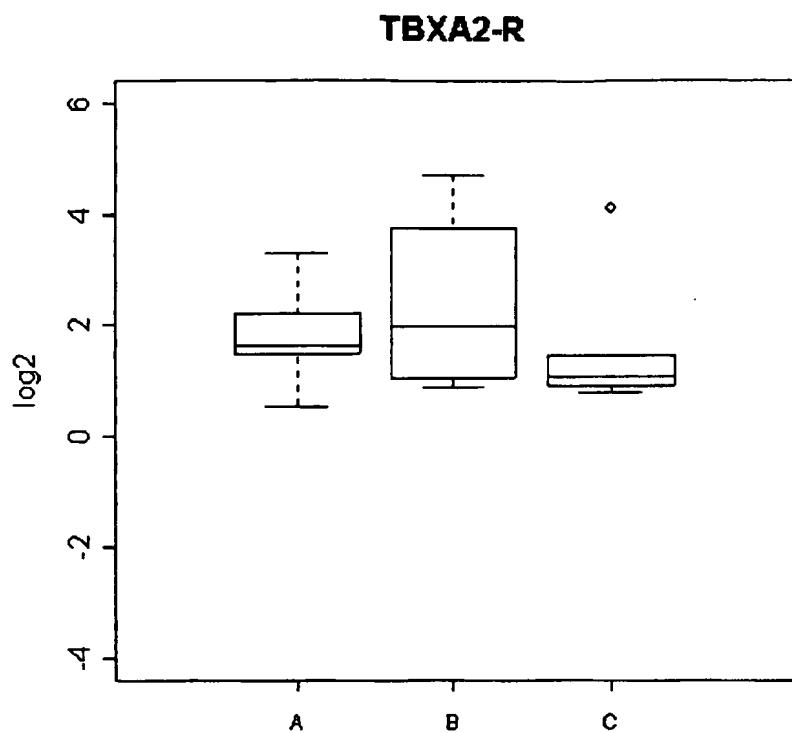
[Fig. 079]



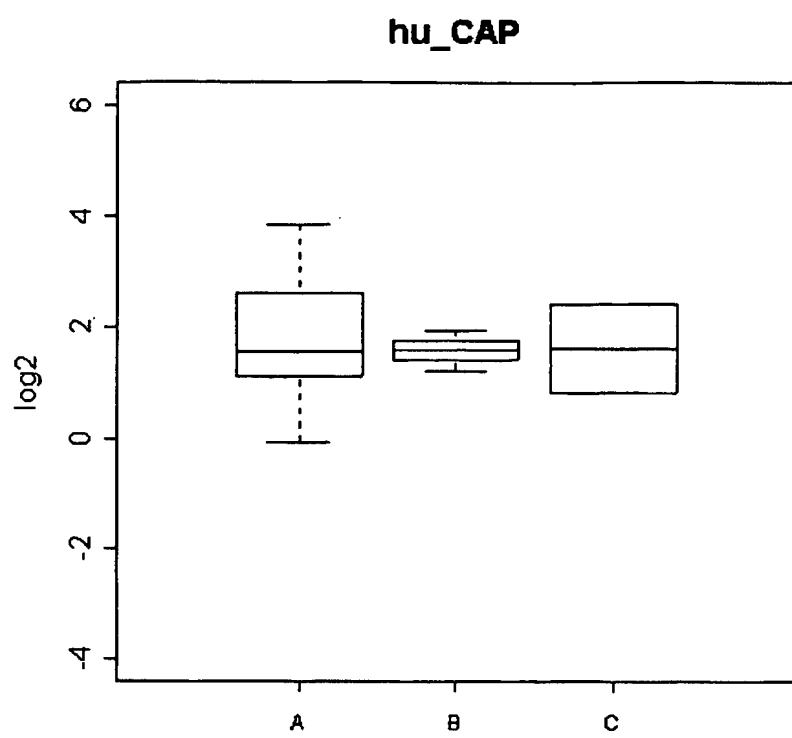
[Fig. 080]

**LDH-B**

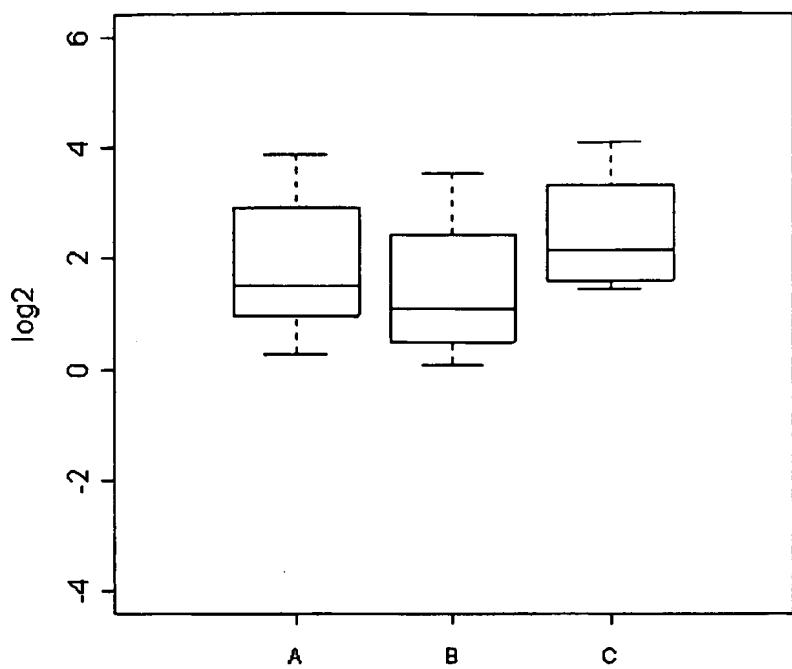
[Fig. 081]



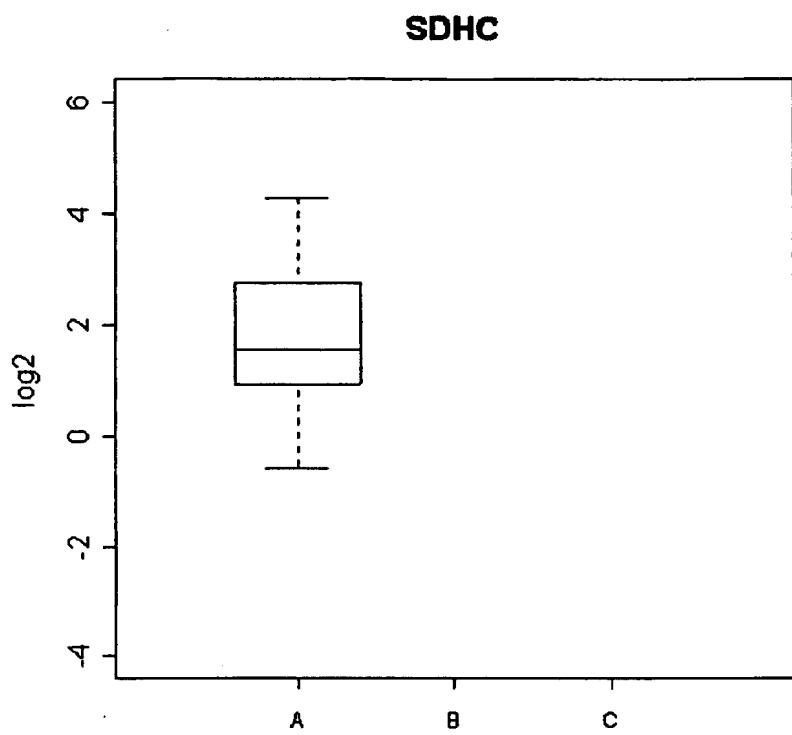
[Fig. 082]



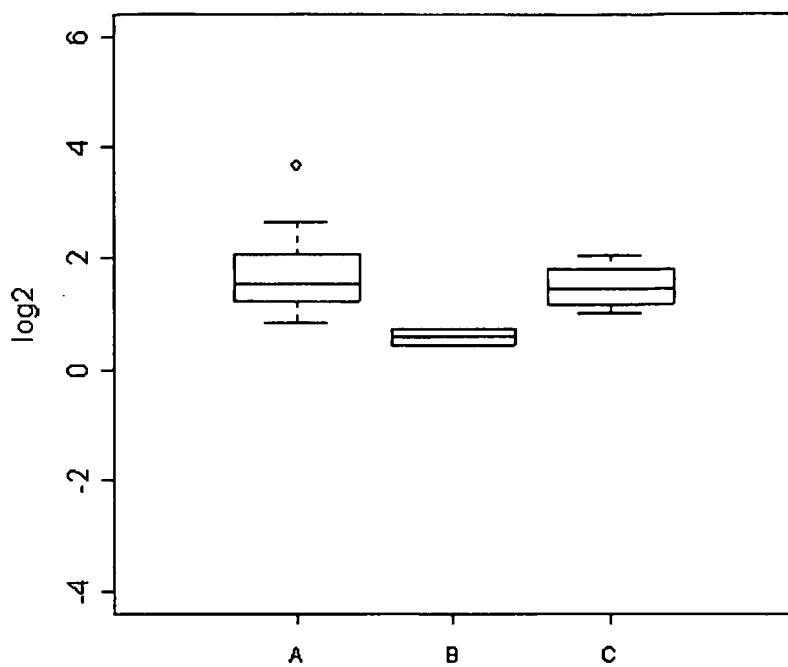
[Fig. 083]

**hu\_PP2a\_cat**

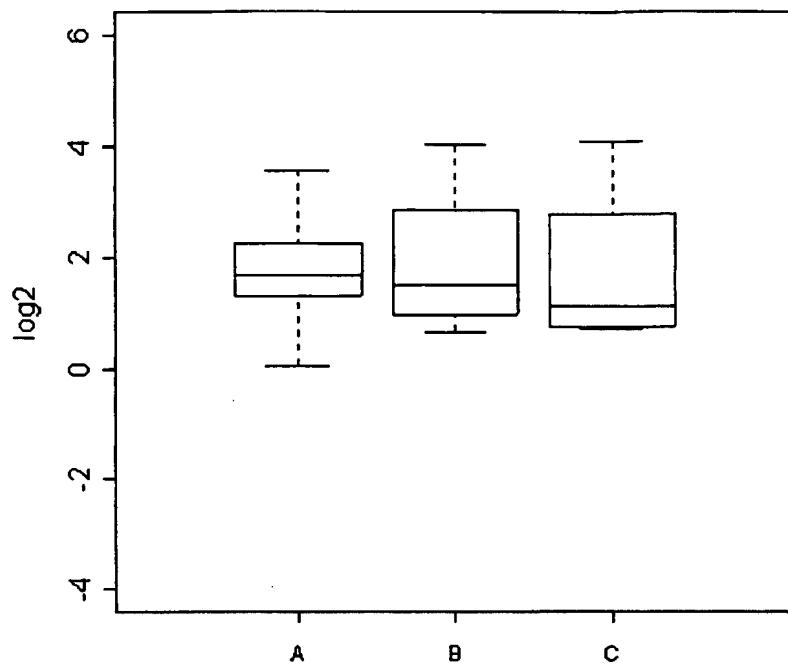
[Fig. 084]



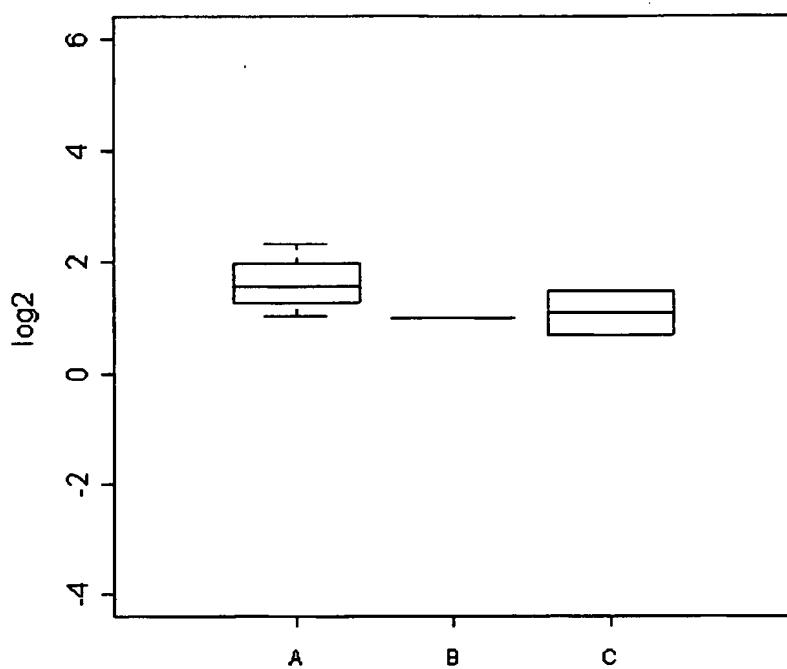
[Fig. 085]

**hu\_GDP-di2**

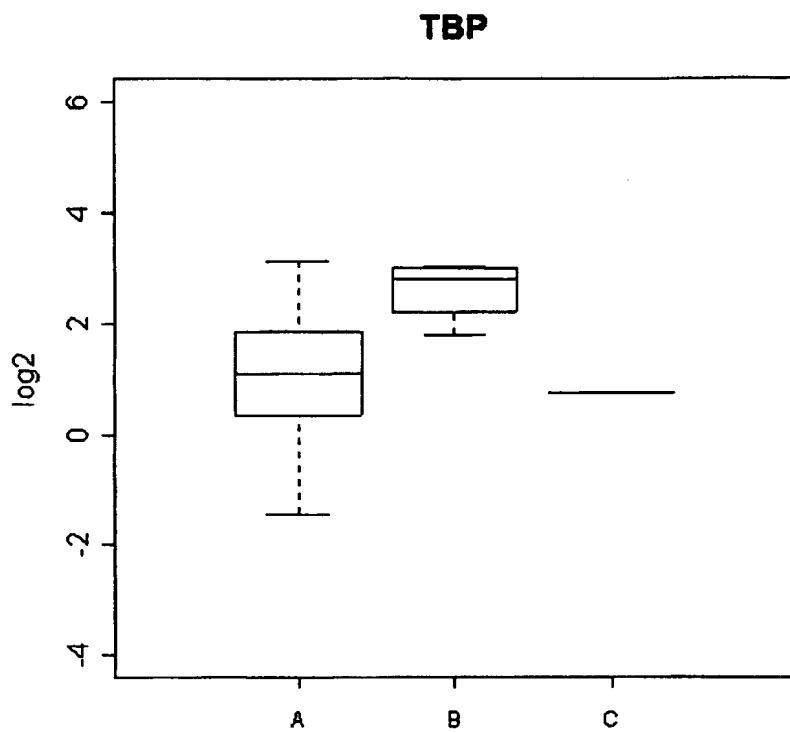
[Fig. 086]

**CCNI**

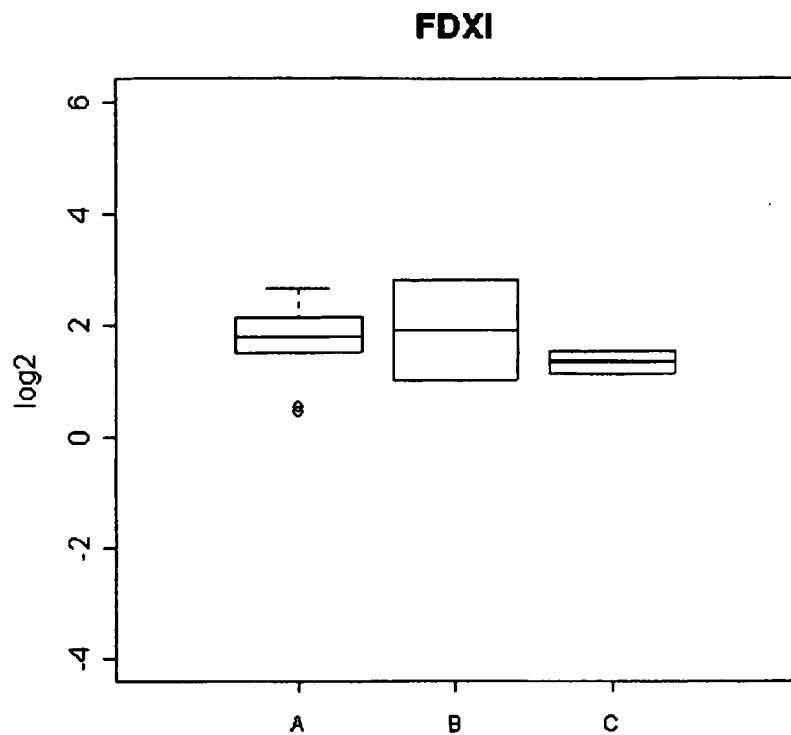
[Fig. 087]

**Mac25**

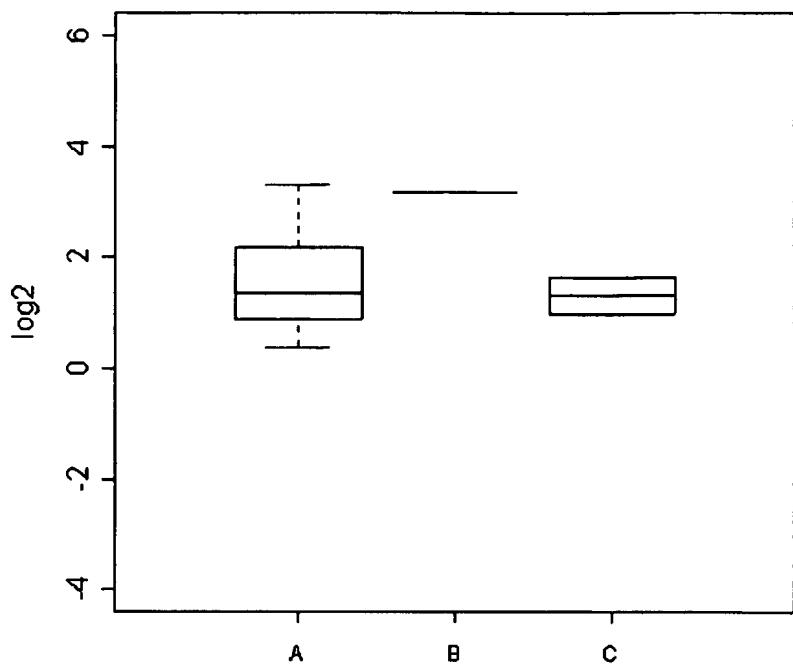
[Fig. 088]



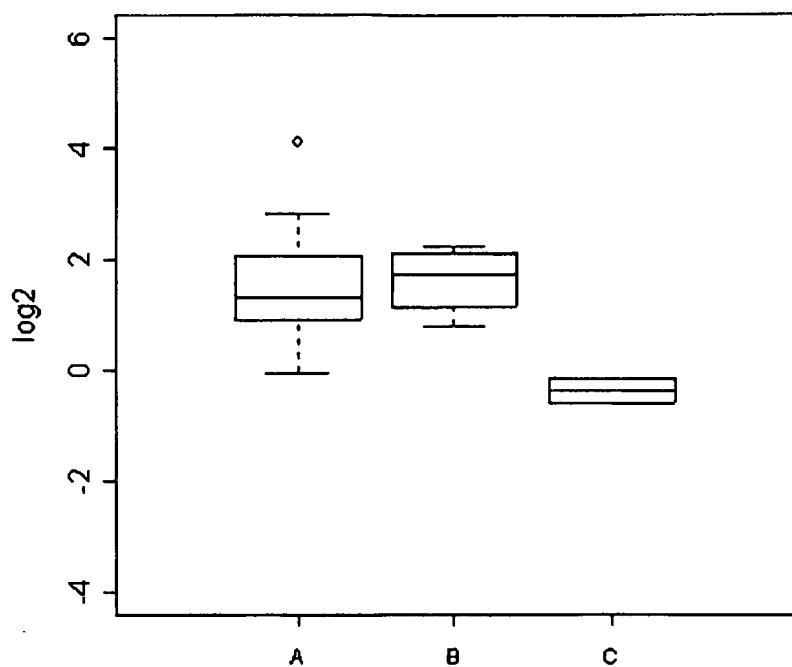
[Fig. 089]



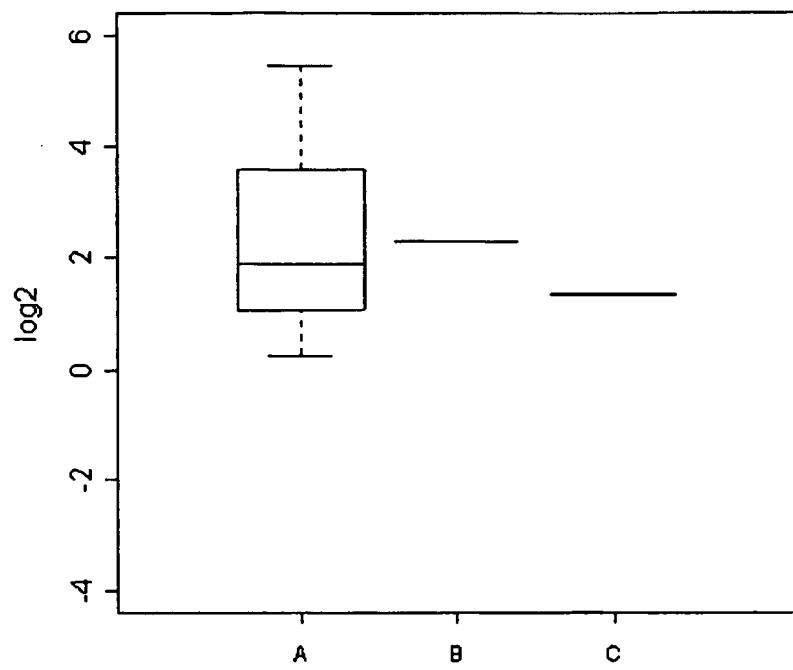
[Fig. 090]

**NLVCF**

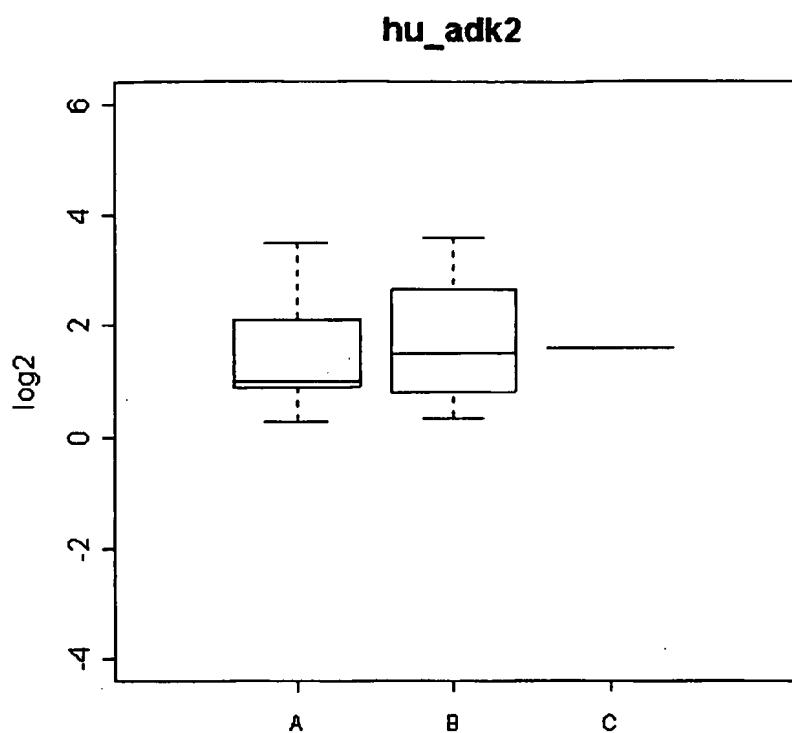
[Fig. 091]

**GNG3**

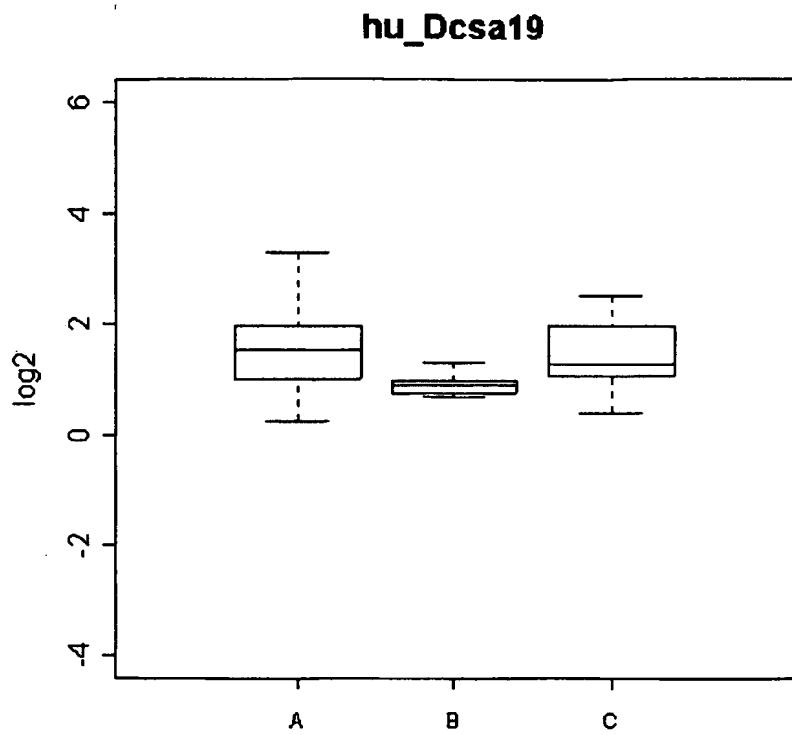
[Fig. 092]

**RCN2**

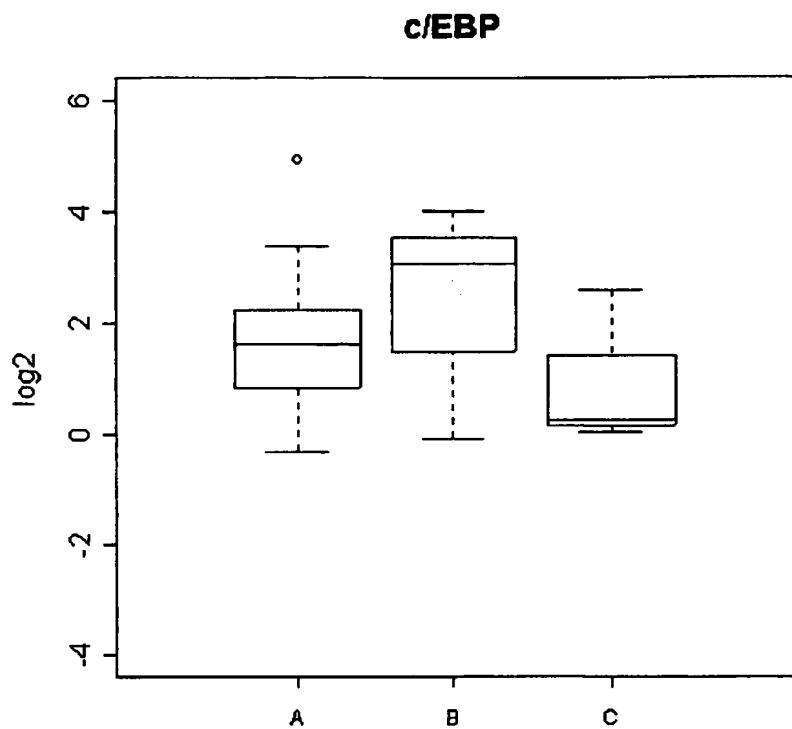
[Fig. 093]



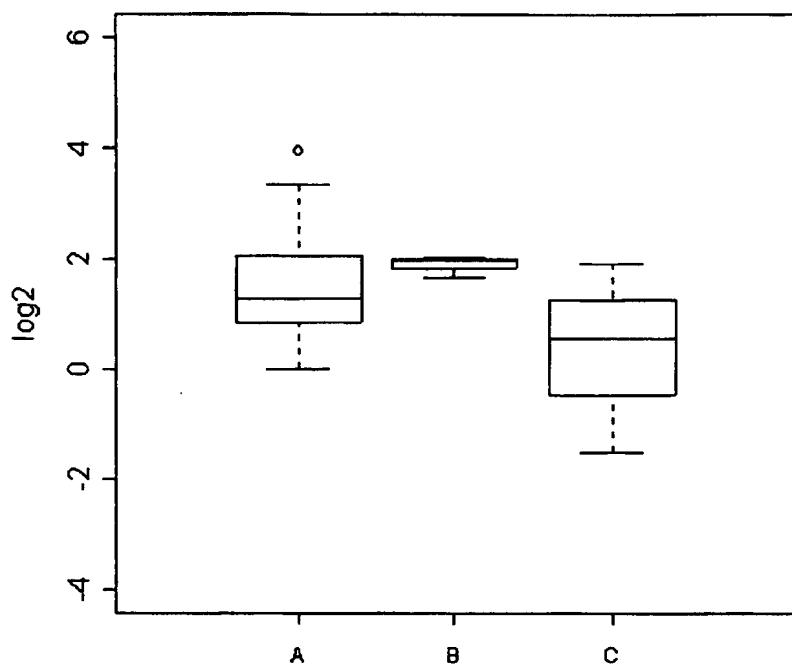
[Fig. 094]



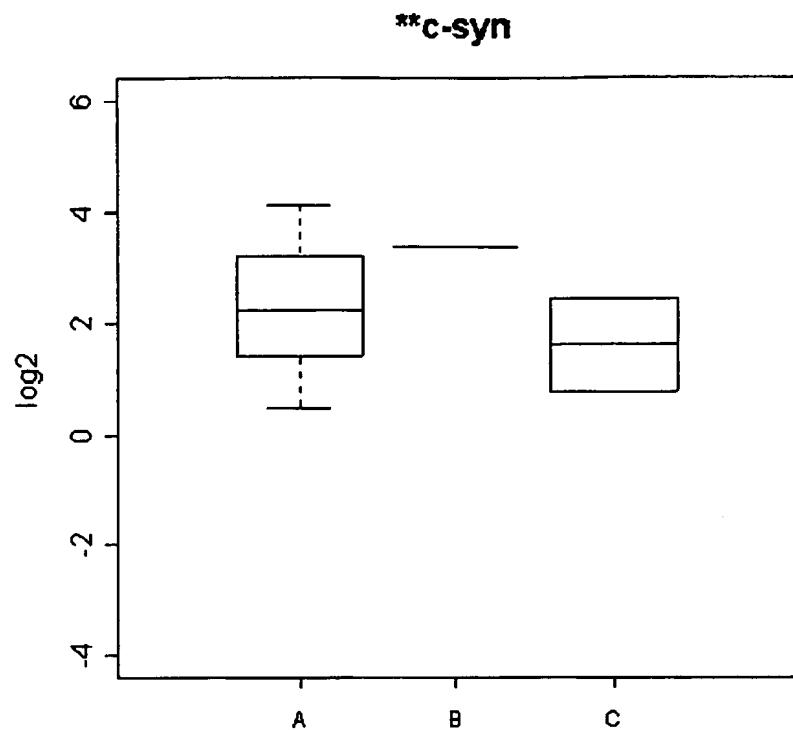
[Fig. 095]



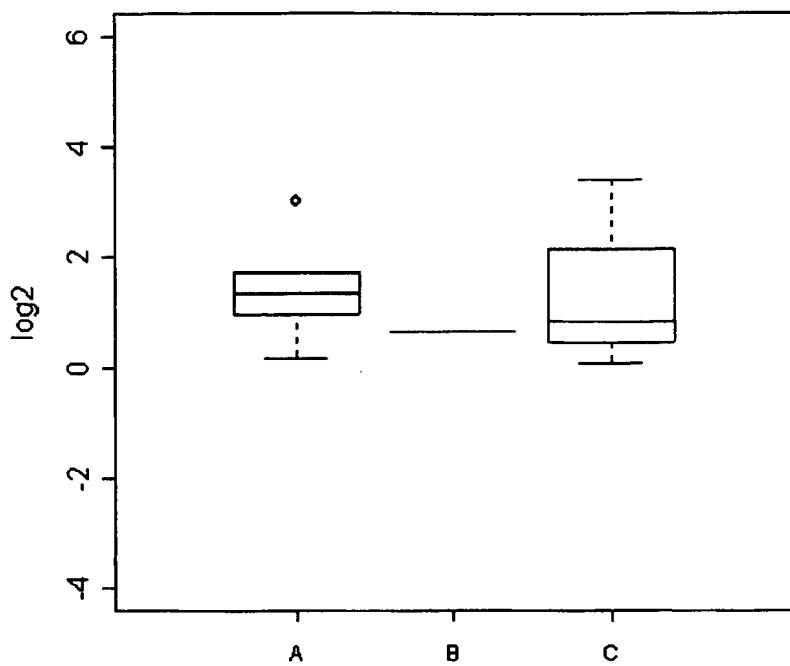
[Fig. 096]

**RabGG**

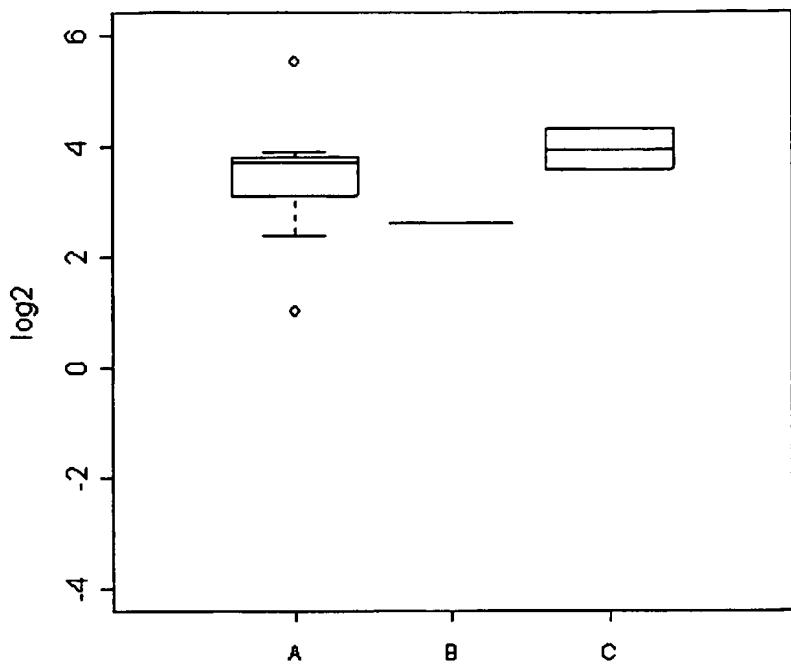
[Fig. 097]



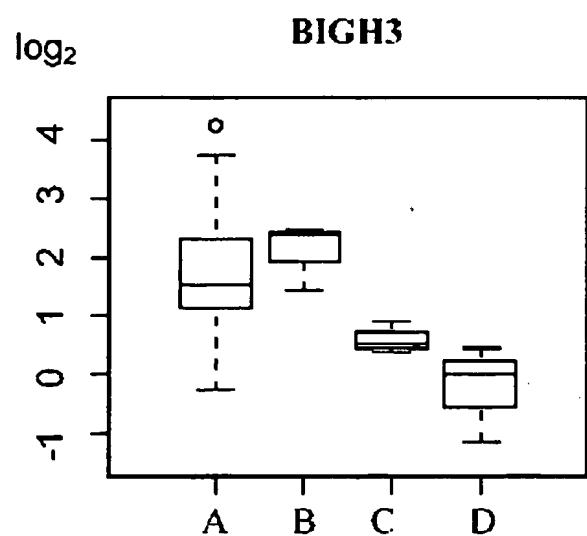
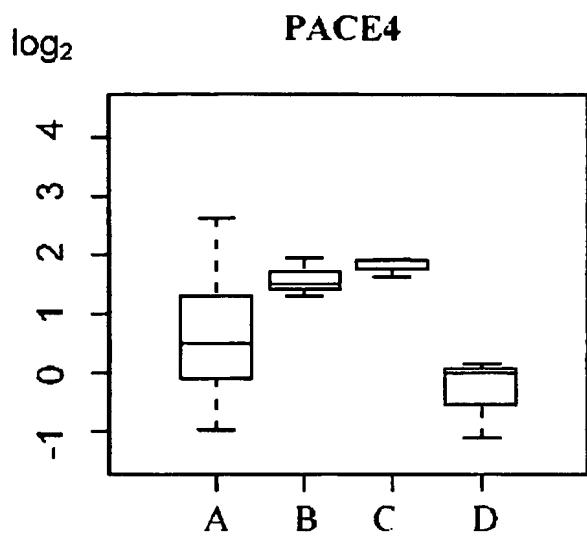
[Fig. 098]

**PPP1R15A**

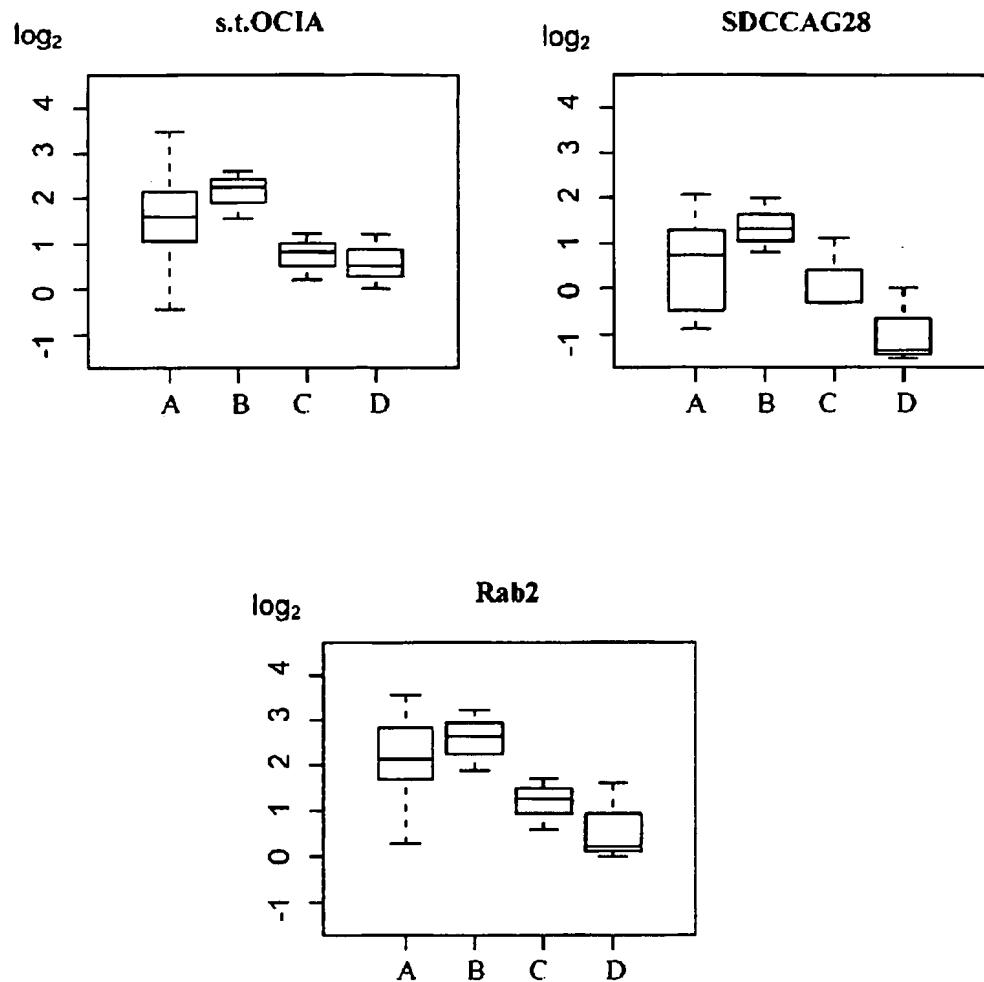
[Fig. 099]

**SCL5A6**

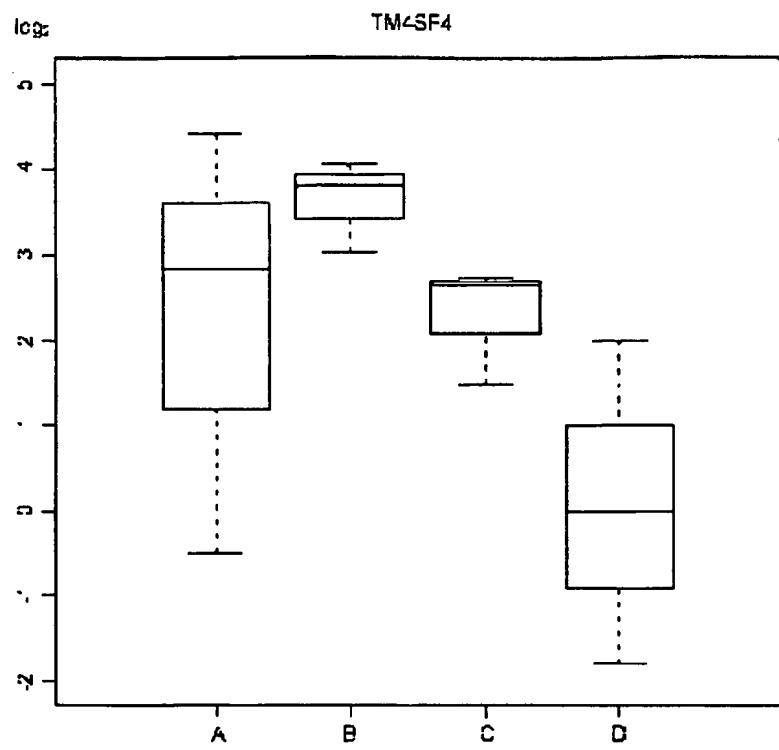
[Fig. 100]



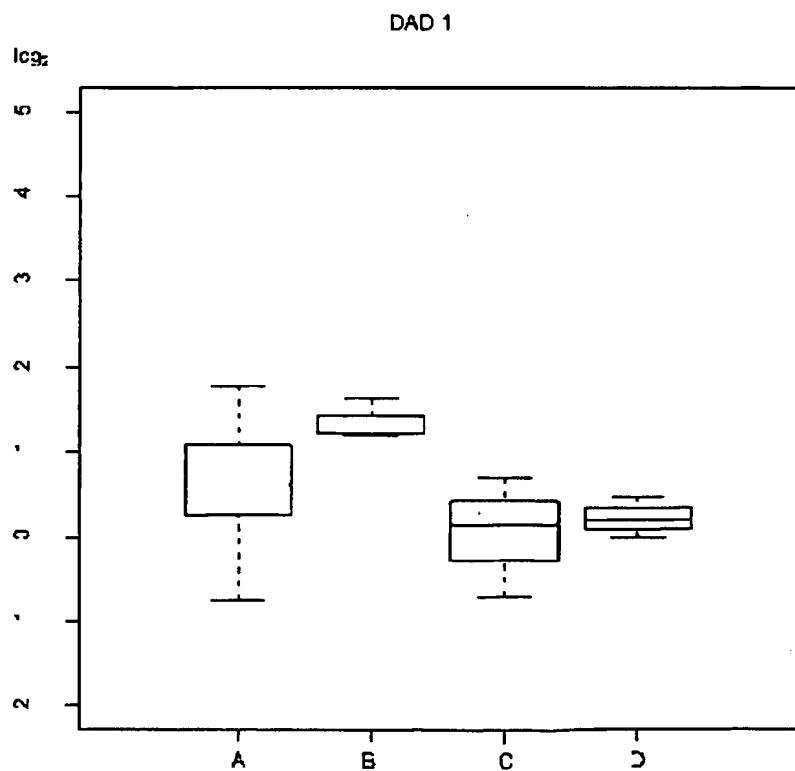
[Fig. 101]



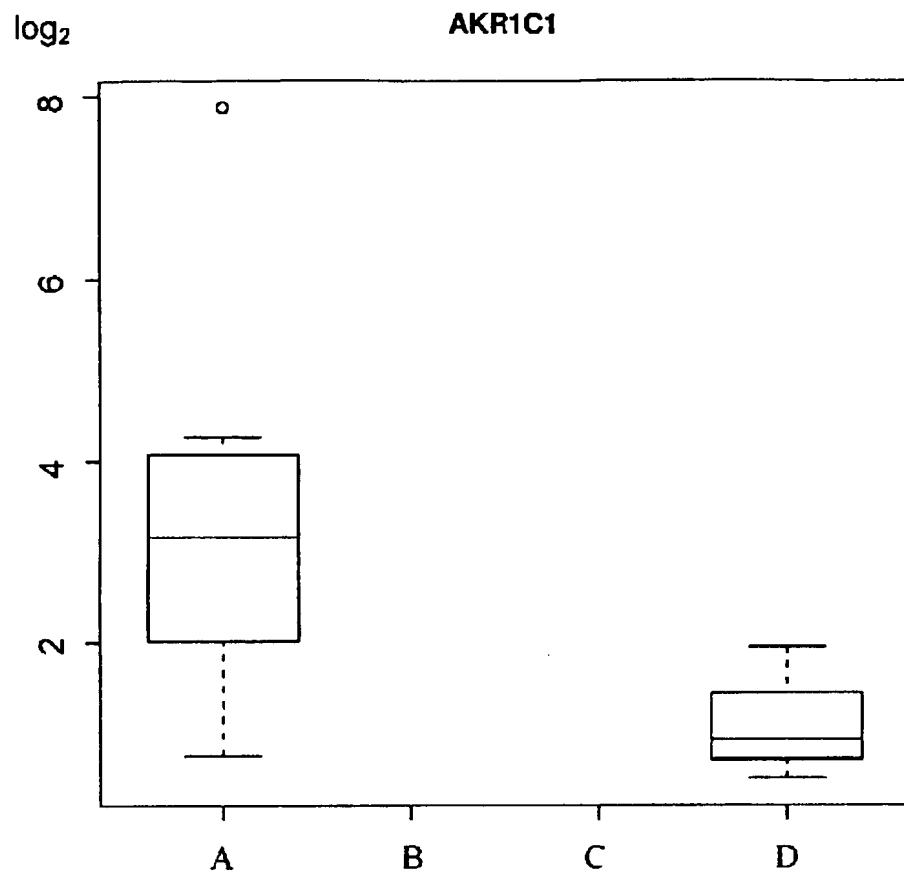
[Fig. 102]



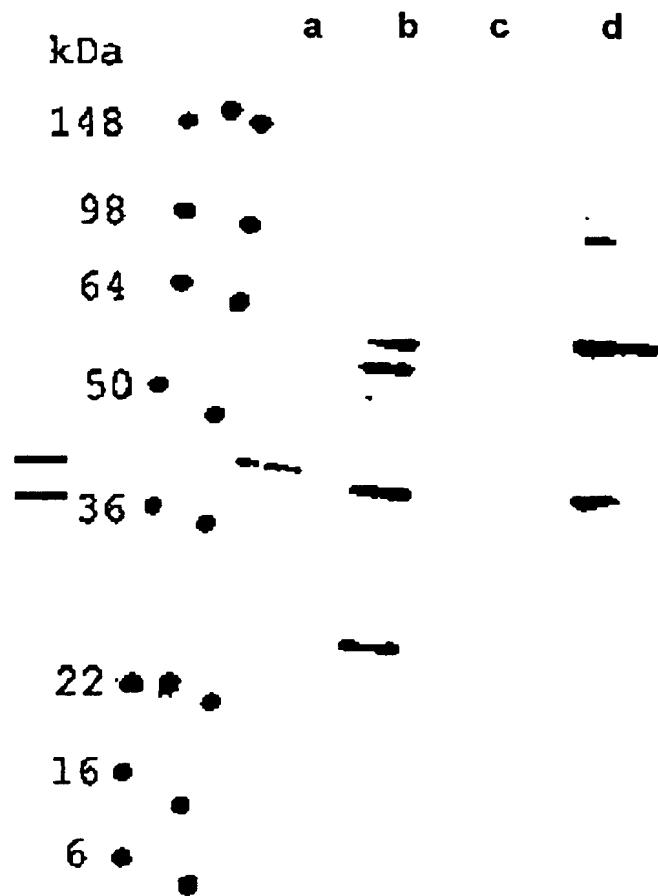
[Fig. 103]



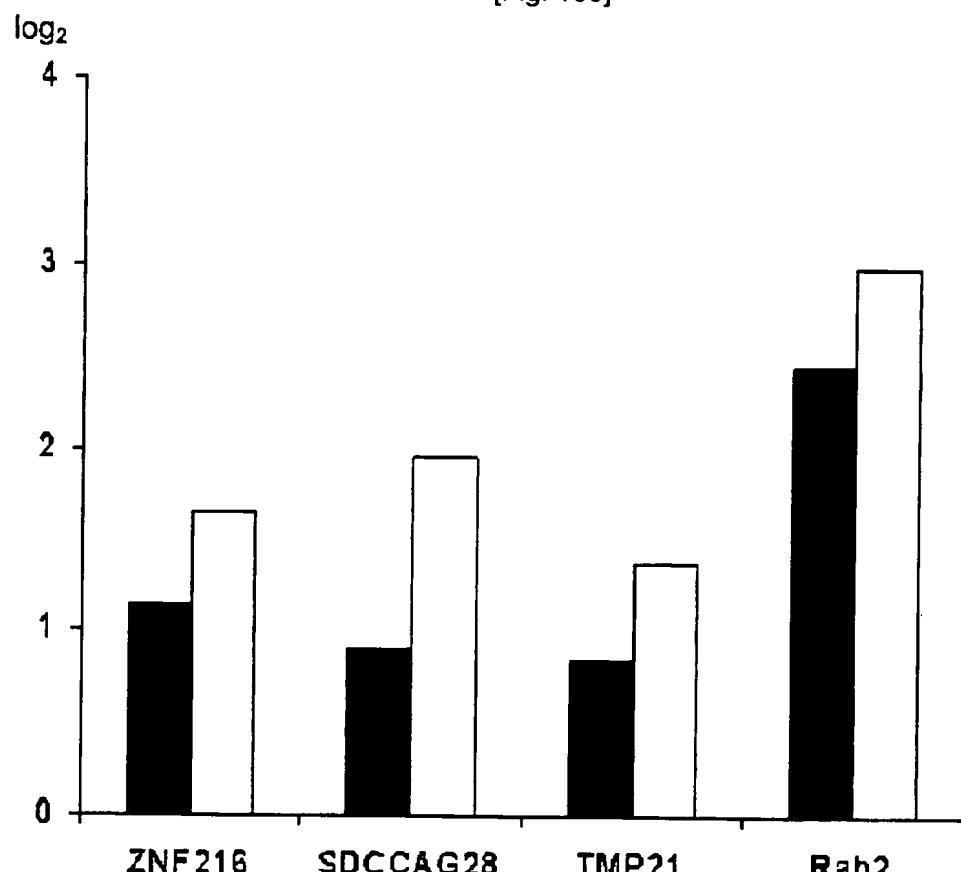
[Fig. 104]



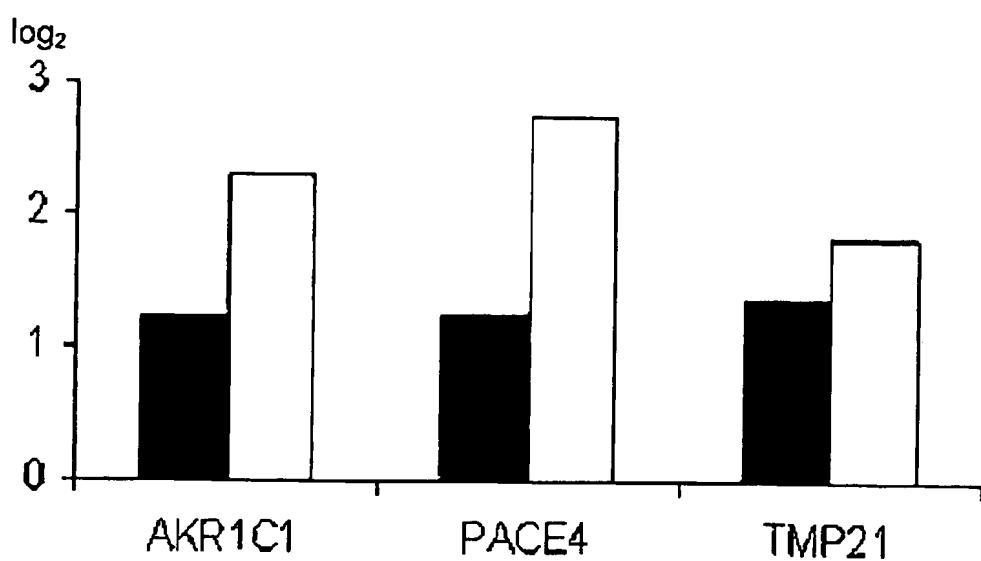
[Fig. 105]



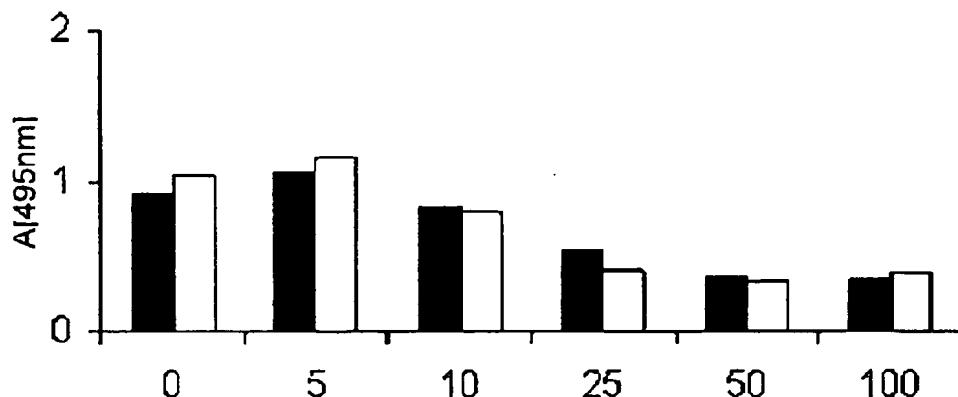
[Fig. 106]



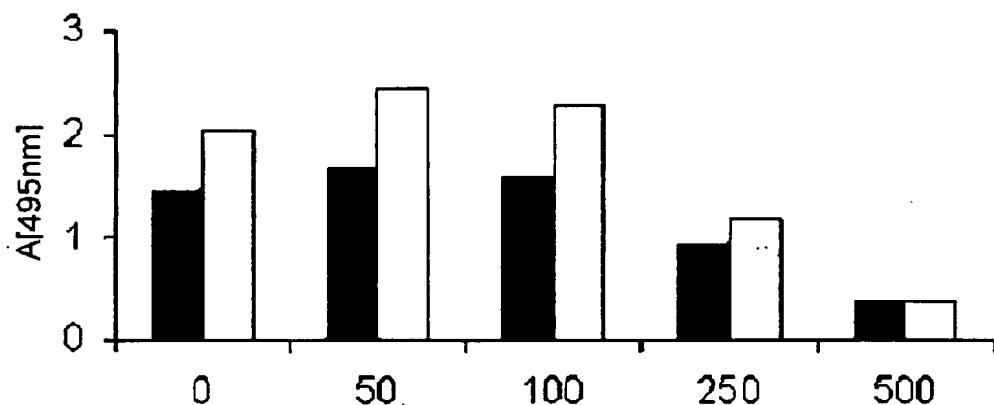
[Fig. 107]



[Fig. 108]



[Fig. 109]



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Guelly, Christian  
Strohmaier, Heimo  
Buck, Charles  
Zatloukal, Kurt

:120> NUCLEIC ACIDS AND ENCODED POLYPEPTIDES FOR USE IN LIVER DIS  
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AND EPITHELIAL CANCER.

:130> 1230FPC

:150> EP04100857.4

:151> 2004-03-03

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cctcgccct tctgatgtgg gggaggctgg agctccatgc acgttagtcca gatgcctgg  
1740

aggaacatc tcccttccag catctgctgg tagcaggctg ggacagtccc ttccttcct  
1800

aaacctgc tctattgcaa ttccctatta tattctgcat cagaaaaaca aacaaaacaa  
1860

aacaacttt aaatgcttgt agcagaaccc cgggtcatct catgtcagaa acctttaatc  
1920

aggcctaaa tttgcataga cctgacattc agctgcctt cagttgcctc ctcccatgag  
1980

caagggtgt gtcagagggc aactggatga ctcgcagtac cacagcactg ggacagacag  
2040

agccacacc tttctttgg gttttgcca agcctcctcc atctccatc agtgctgtgg  
2100

ctggctgca agcctcgaaa cagttctcct ggaagggagg ttttgcttt acccccgcca  
2160

cacttccgc acacaatcat agagaacctc tctgctctc gctggctac agttgtctg  
2220

ttctcaagc agagggcagga agagctagtc ttagcattta tatttaata ggaagttgac  
2280

cccagcatg taaaagtgtt ccacgcagcc ggagtgtatg ccgggagcta agtggctat  
2340

ggtaacat atcccaccc ttccctgag tccttggtcc caatcttctc atttggcct  
2400

tcgttttaa atttttccc cccaaactctt ttgatgtaag agttcagttt gtcttcggga  
2460

tgggtctct gcaaggcgc tggatgagt cttggcttcc aagaggacag gctattagg  
2520

cttggactt tttctgtgc taccgctgct gcttggtgga agtaacagga cgtggattct  
2580

ctcataag tggcagttc cctttctct ctgacttgtc ctagggccat ttctctatgg  
2640

tccctgag aaaggtgagg cccaaaggag agaggccttc aaactgtccc aggtcctgct  
2700

eolf-seql-S000001.txt

```
>agctcagtgcgttatcttcttgcttccatgtgtctttccctgctgcctcactccccac
2760

>cccacttgc cagggttttgcgttatcttctacaccaaagcaaaatcggcctcaggaggg
2820

>gtaaaaaagg gtgccatctgtgtctggagg ggcagctgtgttcatgcctgtgctactgg
2880

>acatttcaca attctggcac ctgcgatttgcgtcaac ctcagaaaatcactatcttgc
2940

>agggttgaa aaacaaccaa agaaaggag tgaggactat ggctgcatgt cctctgcttg
3000

>ccggctgca gagcagagat gtgcagccctctggtcagct ggtccaggct ggtccccgcc
3060

>gtccccccttc cagtccagcc accaagagtc cacttgtccc gggcttccac ctggctgaca
3120

>gaagaattt ctgagagctg gatgtgcatg ccctgtggac gaaggtacag ctgcctgccc
3180

>cccccaatc ccagccccga caatcacatgcgtgactc ggacactggc ctgggaaca
3240

>tgttcgaga gaacacttgc cccttgactgttaggagccag aaggggaccc aggtgtgcat
3300

>.gctctctgt agacatTTT acccaaacct gttggtaaag tgcccatctgtgtcaaga
3360

>agcctgggg gtctaacagg gagcccggtgcctcacctg gccacagcct ccacaccaga
3420

>ctccacatt gtcttgatcc agaccagctc tgtgatcaga aggaaattgg gtccagtgt
3480

>gagagagct ggtcctgggc ctggcaggca agagtgtggg catcctttcc tggcctttct
3540

>cactctccc tcaaggctgt gtcaggttgccttgaatgt ggactctgga agagccagg
3600

>cccagaatgcggggagg cttctgagtg gcactcatgg aacaccgtcc ctctgccagc
3660

>ataggccct gcctccagtg tcagggaatg gaggctgggc tgcgagagtg ttgctgcccc
3720

>tgtgtcatt cttctaatcc aatgttagaaa ttgtacgtaa tgtatTTAA tcaacgcaaa
3780

>gtatgaata acaaatacag ttctgacctt ttttgtccag tttctttggg ggaaggaaga
```

eolf-seql-S000001.txt

3840

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3900

gacgtggct cctggggcta tttctcccta ataaaggatg atccaggtcc tcatttccaa  
3960

gtcccaatg ctctgaaaac caaaaagtatt ttcataaccc atttgaaacc aaacctgacc  
4020

gaacttaca ctgataggaa gctatggta attatgatgt gttccttta gtgtgattct  
4080

tgtgcaga aatgtcaata tattttatga catggttccc tactagggat tatacagtat  
4140

tgctgacta cttcctaaga gccaaaaata aaaaatctga attcc  
4185

210> 2

211> 2425

212> DNA

213> Homo sapiens

400> 2

cggccgcgcg gtcctccctc cacctcctcc tcggcccccc ctcgcttccc tcctcccaact  
60

cccgagctc cggcgctcgtc ccggccacgc tcgacgctgc tgcaggaaca aaggaagacc  
120

cgcggcggc ggcggcgcca cctccgcctg ctgctccgac ccgctcccg cccgccccgg  
180

ggcaccagg gcgcccggtc cagcattccc ggaggcctcg gcccggctc atcgtgccgg  
240

ttcgcgccgc gaacccggct ttgcatttg ggaccctgca ggaaaaatat ggctcaggag  
300

ctaaccaga cccccggcc catgctgtgt agcacaggat gtggcttta tgaaaatcct  
360

ggacaaatg gaatgtgttc agttgctac aaagaacatc ttcagaggca gcaaaatagt  
420

gcagaatga gccaatggg gacagctgt ggttccaaca gtcctacctc agattctgca  
480

ctgtacaga gagcagacac tagcttaaac aactgtgaag gtgctgctgg cagcacatct  
540

aaaaatcaa gaaatgtgcc tgtggctgcc ttgcctgtaa ctcagcaaat gacagaaatg

## eolf-seql-S000001.txt

600

gcattcaa gagaggacaa aataactacc ccgaaaacag aggtgtcaga gccagttgtc  
660

ctcagccc gtccatcagt ttctcagccc agtacttctc agagtgaaga aaaagctcct  
720

aattgccca aaccaaagaa aaacagatgt ttcatgtgca gaaagaaaagt tggtcttaca  
780

ggtttgact gccgatgtgg aaatttgttt tgtggacttc accgttactc tgacaagcac  
840

actgtccgt atgattacaa agcagaagct gcagcaaaaa tcagaaaaga gaatccagtt  
900

tttgtggctg aaaaaattca gagaatataa attacttctt gtgaagagac tgaaactttg  
960

ttttatttt aatatatcgt aggaaaacat taaagagcag atgcatggcc atttttcttt  
1020

atgttctcc agagtttac attacacttg tctgtcttat aattgatatt ttaggatgtt  
1080

gggtgtttg ttacaggcag aattggatag atacagccct acaaatgtat atgccctccc  
1140

tgaaaaaaaa ttggatgaaa atctgcacag caaagtgaaa cacacagata ataggaacaa  
1200

atgttagttc ccatgtgcca aacaaaataa atgaaatctc tgcattttg cagcatatct  
1260

cctttggg aatgtaatca aggtataatc tttggctagt gttatgtgcc tgtatTTT  
1320

aaatggta caccagaaaa ggactggcag tctacttcta ccatagttaa acttcaccct  
1380

tttaatttc acaacatatt ctggaaagc aggaagaaat gctcataaag aggatcagac  
1440

:tctttccc gtgaaaccag tatttggcgc catatataag cctggtaaaa ttggtcatct  
1500

:agctgtca aataagacat tctgtgaaag gtaaacatcg aaactggta taagtaaaac  
1560

:tcaagcca acaacagggt cttgagataa cctttgaagc ttattgtact ggcctgcacc  
1620

:aagatgtc tgcattactc attgctaaaa atgtgttagca cagaactgca ctaggattaa  
1680

## eolf-seql-S000001.txt

ttgtttaca agaagaaatt taaaactctac gtttggttt cacatacagc agctctattg  
1740

ataacatgc atctgaattt taagttgcaa aggtatctga ataatttttc atgtgcacatct  
1800

ttgtcgaat gttttggtc aagaaagaat gttaaagct tttaaaaaga cttcagttct  
1860

aatgtaact gtacccttct gcatggaaaa tcataaccaa catggctgca gtagacttct  
1920

agtggtac cagcgccact tgcagagggc tgcttatca tattgtactt gggtgttagga  
1980

tctagtgtt ctgggtgta ttgcattttttt acagcattgt acaataacaa  
2040

tagaaaagg cagtataactt cactgatgct tgtctggtaa taatcacttc tgtgttataa  
2100

ggaaagggttt tttgtatgt atgaaacttg tgtttttat atataaatga gtatagttag  
2160

gttggta atgcctgttt tcattttttt atagtttgtt atgtacacga ggcactactt  
2220

:gatttatt gcaatgttca gtcctagttt ttacttttat tcttaaagca ttcagtttg  
2280

:ttcaattt tatgtacacctt agttctgagt tagacactgca gatgtgtaca gatagttcat  
2340

:ttatgtat tgcacataat catgctattc agcattgtatg ctatattgtatgttataat  
2400

:taaaaagcc atgtacagag ggaaa  
2425

?10> 3  
?11> 1220  
?12> DNA  
?13> Homo sapiens

100> 3  
jccaggcta gtgacagaaa tggattcgaa atatcagtgt gtgaagctga atgatggta  
60

:tcatgcct gtcctggat ttggcaccta tgcgcctgca gaggttccta aaagtaaagc  
120

:tagaggcc accaaattgg caattgaago tggctccgc catattgatt ctgctcattt  
180

## eolf-seql-S000001.txt

tacaataat gaggagcagg ttggactggc catccgaagc aagattgcag atggcagtgt  
240  
aaagagagaa gacatattct acacttcaaa gctttggtgc aattcccatc gaccagagtt  
300  
gtccgacca gccttgaaaa ggtcactgaa aaatcttcaa ttggattatg ttgacctcta  
360  
cttattcat tttccagtgt ctgtaaagcc aggtgaggaa gtgatccaa aagatgaaaa  
420  
ggaaaaata ctatttgaca cagtggatct ctgtgccacg tgggaggccg tggagaagtg  
480  
aaagatgca ggattggcca agtccatcg gggttccaac ttcaaccgca ggcagctgga  
540  
atgatcctc aacaagccag ggctcaagta caagcctgtc tgcaaccagg tggaatgtca  
600  
ccttacttc aaccagagaa aactgctgga tttctgcaag tcaaaagaca ttgttcttgt  
660  
gcctatagt gctctggat cccaccgaga agaaccatgg gtggacccga actccccggt  
720  
ctcttggag gaccttgtcc tttgtgcctt ggcaaaaaag cacaagcgaa ccccagccct  
780  
attgcctg cgctaccagc tacagcgtgg gggttggtc ctggccaaga gctacaatga  
840  
cagcgcattc agacagaacg tgcaggtgtt tgaattccag ttgacttcag aggagatgaa  
900  
gccatagat ggcctaaaca gaaatgtgcg atatttgcattt cttgtatattt ttgttggccc  
960  
cctaattat ccattttctg atgaatatta acatggaggg cattgcatga ggtctgccag  
1020  
agggcctgc gtgtggatgg tgacacagag gatggctcta tgctggtgac tggacacatc  
1080  
cctctggtt aaatctctcc tgcttggtga tttcagcaag ctacagcaaa gcccattggc  
1140  
aaaaaaaaa agacaataat tttgtttttt cattttgaaa aaattaaatg ctctctccta  
1200  
agattcttc acctaaaaaa  
1220

## eolf-seql-S000001.txt

:210> 4  
:211> 1816  
:212> DNA  
:213> Homo sapiens

:400> 4  
:tcgccttct ggctctgcca tgccctgctc tgaagagaca cccgccattt cacccagtaa  
60  
:cgggccccgg cctgcggagg tgggcggcat gcagctccgc tttgcccggc tctccgagca  
120  
:gccacgggcc cccacccggg gctccgcgcg cgccgcgggc tacgacctgt acagtgccta  
180  
:gattacaca ataccaccta tggagaaaagc tggatgtgaaa acggacattc agatagcgct  
240  
:ccttcgtgg tggttatggaa gagtggtcc acggtcaggc ttggctgcaa aacactttat  
300  
:gatgttagga gctgggtgtca tagatgaaga ttatagagga aatgttggtg ttgtactgtt  
360  
:aattttggc aaagaaaaagt ttgaagtcaa aaaaggtgtat cgaattgcac agtcatttg  
420  
:gaacggatt ttttatccag aaatagaaga agttcaagcc ttggatgaca ccgaaagggg  
480  
:tcaggaggt ttgggttcca ctggaaagaa ttaaaatcta tgccaagaac agaaaacaag  
540  
:agtcataacc ttttccttaa aaaaaaaaaaa aaagtttttgc ttcaagtgtt ttgggtgtt  
600  
:gcacttctg taaacttact agctttaccc tctaaaagta ctgcatttt tacttttt  
660  
:atgatcaag gaaaagatcg taaaaaaaaaa acacaaagaa gttttcttt gtgtttggat  
720  
:aaaaagaaa ctttgggtttt ccgcaattga aggttgtatg taaatctgct ttgtggtgac  
780  
:tgatgtaaa cagtgtctc taaaatcaa atgtaaatca attacagatt aaaaaaaaaaa  
840  
:ctgttattt aactcatatg atctcccttc agcaacttat tttgctttaa ttgctttaaa  
900  
:cttaagcaa tatttttat tcagtaaaca aattcttca caaggtacaa aatcttgcac  
960

eolf-seql-S000001.txt

agctgaact aaaataaaaa tgaaaaggag agattaaagg tattccttgt tcttccttc  
1020

cttcactag tctaaaaact tcttttaat cttaaagattc tttgtgatga gggtgagaaa  
1080

agaatccctc agtttatttt tccactatta atcttcttt tgataaatcc tctattgact  
1140

ggtagaggt atgtttgtga aagacatgta acttggggat ttgttacttt aggtttgttc  
1200

cttgaattt catctcatca ggcaaattgt actagttgta gttacgagtt ttccctcagt  
1260

aagtagcaa taggctgtaa tcaagaaaat atgcattta tagagataag ataaatgaaa  
1320

aatactca gccaccaggt tttctgtct cacatacata agcagcattt cattgcagat  
1380

tggactga ttctgtggct taccttgatt aacatcttt ggaagtttg ctatgtgct  
1440

tccttcctt tactatgtt ctcagattcc tttgtatcag gttttgggt gtcacttagg  
1500

tttgcctt cagattctgt gagacaccag gcatcgttt gaggatgtgg gttatacaca  
1560

ggagtgcctt ctggaactat cagccactt gaccacccag tttgtggaag cacaggcaag  
1620

gtgttcttt tctggtgatt ctccaggcca tttaataccc tgcaatgtaa ttgtccctct  
1680

tggctcaca tttcatttagt gagccatgaa atcaactcag tggcacatag ccagcatttt  
1740

' gcataccag gttggctat aaaatatttc tttgtcaat aaattttaaa tttttccctg  
1800

aaaaaaaa aaaaaa  
1816

210> 5  
211> 4553  
212> DNA  
213> Homo sapiens

400> 5  
cgcccccccg aggacgcctc tggggcggca ccgcgtcccg agagccccag aagtcggcgg  
60

eolf-seql-S000001.txt  
gaagttcc ccgggtgggg gcgttccgg cctccggac ggctctcgcc cccggagccc  
120  
  
gtcgcagga ggcggggccc gggggcgaaa acgcgccgac gccgcctcct cctccccggc  
180  
  
cccgccccgc ggccgtgttg gcggcgccgg tggcgccggc ggccggcgctt ccccgccg  
240  
  
agcggcttt aaaaggcgac actccacccc cggcgcaact cgtagtcgg gcggcgccg  
300  
  
gcctgtcgc cgctatgcct ccgcgcgcgc cgcctgcgc cggggcccg cccggcccc  
360  
  
ggccgcccgc cgccaccgac accgcgcgg ggcggggggc cgccgggggc gcggggggc  
420  
  
cgccggggcc cgggttccgg ccgctcgccgc cgcgtccctg gcgcgtggctg ctgcgtctgg  
480  
  
gcgcctgc cgccctgcctcc gcgcgcgcgc cgcgcggcgt ctacaccaac cactggcg  
540  
  
gcaagtgc gggcgcccg gccgaggcg accgcgtggc ggccggcgac ggtaacctca  
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660  
  
aaatcaac cttgagtagc agaggccctc acacccctt cagaatggac cccaggtga  
720  
  
atggctcca gcaacagggaa gtgaaacgaa gggtaagag acaggtgcga atgacccgc  
780  
  
ggccctta cttcaacgcac cccatttgtt ccaacatgtg gtacctgcat tgtggcgaca  
840  
  
aaacagtcg ctgcccgtcg gaaatgaatg tccaggcagc gtggaaaggagg ggctacacag  
900  
  
aaaaaacgt ggtggtcacc atccttgatg atggcataga gagaaatcac cctgacctgg  
960  
  
cccaaatta tgattcctac gccagctacg acgtgaacgg caatgattat gacccatctc  
1020  
  
acgatatga tgccagcaat gaaaataaac acggcaactcg ttgtgcggga gaagttgctg  
1080  
  
tcagcaaa caattcctac tgcacatcggtt gcatagcgta caatgccaaa ataggaggca  
1140  
  
ccgcacatgcgat gtcacagatg tggtcgagggc aaagtcgctg ggcacatcagac

## eolf-seql-s000001.txt

1200

caactacat cgacattac agtgcagct gggggccgga cgacgacggc aagacggtgg  
1260

cgggccccgg ccgactggct aaggaggctt tcgagtatgg cattaaaaag ggccggcagg  
1320

cctgggctc catttcgtc tggcatctg ggaatggcgg gagagagggg gactactgt  
1380

gtgcgatgg ctacaccaac agcatctaca ccatctccgt cagcagcgcc accgagaatg  
1440

ctacaagcc ctgg tacctg gaagagtgtg cctccaccct ggccaccacc tacagcagt  
1500

ggccttta tgagcgaaaa atcgtcacca cggatctgcg tcagcgctgt accgatggcc  
1560

cactgggac ctca gtct cccatgg tggcggcat catgccttg gctctagaag  
1620

aaacagcca gttAACCTGG agggacgtcc agcacctgct agtgaagaca tcccggccgg  
1680

ccacctgaa agcgagcgac tggaaagtga acggcgcggg tcataaagtt agccatttct  
1740

tggatttgg ttgggtggac gcagaagctc tcgttgttga ggcaaagaag tggacagcag  
1800

gccatcgca gcacatgtgt gtggccgcct cggacaagag acccaggagc atccccttag  
1860

gcaggtgct gcggactacg gccctgacca gcgcctgcgc ggagcactcg gaccagcggg  
1920

ggctactt ggagcacgtg gtggttcgca cctccatctc acacccacgc cgaggagacc  
1980

ccagatcta cctggtttct ccctcggaa ccaagtctca acttctggca aagagggtgc  
2040

ggatcttc caatgaaggg tttacaaact ggaaattcat gactgtccac tgctggggag  
2100

aaaggctga agggcagtgg accttgaaa tccaagatct gccatcccag gtccgcaacc  
2160

ggagaagca agggaaatgg aaagaatgga gcctcataact gtatggcaca gcagagcacc  
2220

gtaccacac ctca gtgcc catcagtccc gctcgccgt gctggagctc tcagccccag  
2280

## eolf-seq1-S000001.txt

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2400  
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2520  
ctactttgg ggacacagca gcaagacgct gtcgcccgtg ccacaagggg tgtgagacct  
2580  
ctccagcag agctgcgacg cagtgcctgt cttgccgccc cgggttctat caccaccagg  
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2760  
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2820  
ctacttga ctcagagctg atcagatgtg gggaaatgcca tcacacctgc ggaacctgcg  
2880  
ggggccagg cagagaagag tgcattcact gtgcgaaaaa cttccacttc cacgactgga  
2940  
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3000  
agtgtgtcg aagggtgtac gagaactgct tgagctgtgc aggctccagc aggaactgta  
3060  
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3120  
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3180  
cttcattca gttctgctgc cgcacgtgcc tcctggccgg gtaagggtgc ctagctgccc  
3240  
cagagggca ggcactccca tccatccatc cgtccacctt cctccagact gtcggccaga  
3300  
tctgtttca ggagcggcgc cctgcacctg acagcttat ctccccagga gcagcatctc  
3360

eof-seql-S000001.txt  
:gagcaccca agccaggtagtgg gtggtagctc ttaaggaggt gttcctaaaa tggtgatatac  
3420  
:tctcaaatg ctgcattgttgc gctccagtct tccgacaaac taacaggaac aaaatgaatt  
3480  
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3540  
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3720  
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3840  
.attccaaag ccagaccaga agattctatc ccccgagcg ctctccttg agcaagccga  
3900  
.ctctccttg ttaccgttttgc ctgtctgtgt ctgcaggagt ctcatggcct gaacgaccac  
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4080  
aatcatcca tcacttccca ttttatggaa ttgctttaa aatacatggc gcctctgccc  
4140  
tcagaagac tcgttttaa ggtggaaact cctgtgtctg tgtatattac aagcctacat  
4200  
acacagttg gatttattct gccaaacctg tgtaggcatt ttataagcta catgttctaa  
4260  
ttttaccga tgttaattat tttgacaaat attcatata tttcattga aatgcacaga  
4320  
ctgcttgat caattccctt gaataggaa gtaacatttgc cttaaatggc ttgcaccc  
4380  
tctttctcc atattgtcct gctccctgt ttgacgacag tgcatttgcc ttgtcacctg  
4440  
gagctggag agaaccggaga tggtgttat tgaatctaca actctgaaag agaaatcaat

## eolf-seql-S000001.txt

4500

jaagcaagta caatgttaac cctaaattaa taaaagagtt aacatcccat ggc  
4553

:210> 6  
:211> 2691  
:212> DNA  
:213> Homo sapiens

:400> 6  
|cttgcgggt cggtcgctag ctcgctcggt gcgcgtcgtc ccgctccatg gcgctttcg  
60

.gcggctgct ggctctcgcc ctggctctgg ccctgggccc cgccgcgacc ctggcgggtc  
120

:cgccaagtc gccctaccag ctggtgctgc agcacagcag gctccgggc cgccagcacg  
180

|ccccaacgt gtgtgctgtg cagaaggta ttggcactaa taggaagtac ttcaccaact  
240

.caagcagt gtaccaaagg aaaatctgtg gcaaataac agtcatcagc tacgagtgt  
300

tcctggata tgaaaaggta cctggggaga agggctgtcc agcagcccta ccactctcaa  
360

.cctttacga gaccctggga gtcgttggat ccaccaccac tcagctgtac acggaccgca  
420

ggagaagct gaggcctgag atggaggggc ccggcagctt caccatctc gcccctagca  
480

cgaggcctg ggcctccttg ccagctgaag tgctggactc cctggtcagc aatgtcaaca  
540

tgagctgct caatgccctc cgctaccata tggggcag gcgagtccctg actgatgagc  
600

gaaacacgg catgaccctc acctctatgt accagaattc caacatccag atccaccact  
660

tcctaattgg gattgtaact gtgaactgtg cccggctcct gaaagccgac caccatgcaa  
720

caacggggt ggtgcacctc atcgataagg tcatctccac catcaccaac aacatccagc  
780

gatcattga gatcgaggac accttgaga cccttcgggc tgctgtggct gcatcaggc  
840

caacacgat gcttgaaggt aacggccagt acacgcttt ggccccgacc aatgaggcct

## eolf-seql-S000001.txt

900

.cgagaagat ccctagttag actttgaacc gtatcctggg cgacccagaa gccctgagag  
960

ccctgtgaa caaccacatc ttgaagtcag ctatgtgtgc tgaagccatc gttgcggggc  
1020

gtctgtaga gaccctggag ggcacgacac tggaggtggg ctgcagcggg gacatgctca  
1080

tatcaacgg gaaggcgatc atctccaata aagacatcct agccaccaac ggggtgatcc  
1140

ctacattga tgagctactc atcccagact cagccaagac actatttgaa ttggctgcag  
1200

gtctgatgt gtccacagcc attgacacctt tcagacaagc cggcctcggc aatcatctct  
1260

tggaagtga gcgggttgacc ctcctggctc ccctgaattc tgtattcaaa gatggaaccc  
1320

tccaaattga tgcccataca aggaatttgc ttcggaacca cataattaaa gaccagctgg  
1380

ctctaagta tctgtaccat ggacagaccc tggaaactct gggcggcaaa aaactgagag  
1440

ttttgttta tcgtaatacg ctctgcattt agaacagctg catcgccggc cacgacaaga  
1500

ggggaggtta cgggaccctg ttcacgatgg accgggtgct gaccccccataatggggactg  
1560

catggatgt cctgaaggga gacaatcgct ttagcatgct ggtagctgcc atccagtctg  
1620

aggactgac ggagaccctc aaccgggaag gagtctacac agtctttgct cccacaaatg  
1680

agccttccg agccctgcca ccaagagaac ggagcagact cttggagat gccaaggaac  
1740

tgccaaatc cctgaaatac cacattggtg atgaaatcct ggttagcgga ggcattgggg  
1800

cctggtgcg gctaaagtct ctccaagggtg acaagctgga agtcagcttg aaaaacaatg  
1860

ggtgagtgt caacaaggag cctgttgccg agcctgacat catggccaca aatggcgtgg  
1890

ccatgtcat caccaatgtt ctgcagcctc cagccaacag acctcaggaa agaggggatg  
1980

eolf-seql-S000001.txt

acttgcaga ctctgcgctt gagatttca aacaaggcatc agcgcccc aggccccc  
2040  
gaggcttgt gcgactagcc cctgtctatc aaaagttatt agagaggatg aagcatttagc  
2100  
tgaaggact acaggaggaa tgcaccacgg cagctctccg ccaatttctc tcagattcc  
2160  
cagagactg tttgaatgtt ttcaaaacca agtatcacac tttaatgtac atggccgc  
2220  
cataatgag atgtgagcct tgtgcgttg ggggaggagg gagagagatg tacttttaa  
2280  
tcatgttcc ccctaaacat ggctgttaac ccactgcgtg cagaaacttg gatgtcactg  
2340  
ctgacattc acttccagag aggacctatc ccaaatgtgg aattgactgc ctatgccaag  
2400  
ccctggaaa aggagcttca gtattgtgg gctcataaaa catgaatcaa gcaatccagc  
2460  
tcatggaa gtcctggcac agttttgtta aagcccttgc acagctggag aaatggcata  
2520  
ttataagct atgagttgaa atgttctgtc aaatgtgtct cacatctaca cgtggcttgg  
2580  
ggctttat gggccctgt ccaggttagaa aagaaatggt atgttagagct tagatttccc  
2640  
attgtgaca gagccatggt gtgtttgtaa taataaaacc aaagaaacat a  
2691  
  
210> 7  
211> 3600  
212> DNA  
213> Homo sapiens  
  
400> 7  
gtggagctg tcgcctagcc gctatcgcat agtggagcgg ggctggagc aaagcgctga  
60  
  
ggagctcggt tacgcccccc cctcgacccc gcagcctcgcc gccccccccc gcccgtcccc  
120  
  
ggagaaccat ggagtctggc agtaccgccc ccagtggatgg ggcacgcagc cttcgagaat  
180  
  
ggagctcta cgccagaag cataacattc aagcgctgtc caaagattct attgtgcagt  
240

## eolf-seql-S000001.txt

gtgcactgc tcgacctgag agacccatgg cattcctcag ggaatacttt gagagggttgg  
300  
jaaggagga ggcaaaacag attcagaatc tgcagaaaagc aggcaactcgt acagactcaa  
360  
ggaggatga gatttctcct cctccaccca acccagtggt taaaggttagg aggcgacgag  
420  
:gctatcag cgctgaggtc tacacggagg aagatgcggc atcctatgtt agaaaggtta  
480  
:ccaaaaaga ttacaagaca atggccgctt tagccaaagc cattgaaaag aatgtgctgt  
540  
:tcacatct tgatgataat gagagaagtg atattttga tgccatgttt tcggtctcct  
600  
:atcgagg agagactgtg attcagcaag gtgatgaagg ggataacttc tatgtgattg  
660  
:caaggaga gacggatgtc tatgttaaca atgaatgggc aaccagtgtt gggaaaggag  
720  
jagctttgg agaacttgct ttgattttag gaacaccgag agcagccact gtcaaagcaa  
780  
jacaatgt gaaattgtgg ggcatcgacc gagacagcta tagaagaatc ctcatggaa  
840  
:acactgag aaagcggaaag atgtatgagg aattccttag taaagtctct atttttagagt  
900  
:ctggacaa gtgggaacgt ctacggtag ctgatgcatt ggaaccagtg cagtttgaag  
960  
:gggcagaa gattgtggtg cagggagaac cagggatga gttcttcatt atttttagagg  
1020  
:tcagctgc tgtgctacaa cgtcggtcag aaaatgaaga gtttgtgaa gtggaaagat  
1080  
gggccttc tgattatttt ggtgaaattg cactactgat gaatcgctt cgtgctgcc  
1140  
tgttgttgc tcgtggcccc ttgaagtgcg ttaagctgga ccgacctaga tttgaacgtg  
1200  
.cttggccc atgctcagac atcctcaaac gaaacatcca gcagtacaac agttttgtgt  
1260  
.ctgtctgt ctgaaatctg ctcctgtgc ctcccttttc tcctctcccc aatccatgct  
1320

eolf-seq1-S000001.txt

:cactcatgc aaactgcttt atttcccta ctgcagcgc caagtggcca ctggcatcgc  
1380

tgcttcctgt ctgtttatat attgaaagtt gcttttattt caccatttc aatttggagc  
1440

ttaactaaa tgctcataca cagttaaata aatagaaaga gttctatgga gactttgctg  
1500

tactgcttc tctttgtgca gtgttagtat tcaccctggg cagtgagtgc catgctttt  
1560

tgtgagggca gatcccagca cctattgaat taccatagag taatgatgta acagtgcagg  
1620

tttttttt taagtgacat aattgtccag ttataagcgt atttagactg tggccatata  
1680

gctgtattt cttttagaa taaatggttt ctcattaaac tctaaagatt agggaaaaatg  
1740

atataaaaa atcttagtat agtagaaaga catctgcctg taattaaact agtttaaggg  
1800

ggaaaaaatg cccattttg ctaattatca atggatatg attggttcag ttttttttt  
1860

ccagagttg ttgttgcca agctaattctg cctggttta tttatatctt gttattaatg  
1920

ttcttctcc aattctgaaa tacttttag tatggctatc tatacctgcc ttttaagttt  
1980

aaactaact catagattgc aaatattgg tagtattaa ctacatctgc ctcggctcac  
2040

aattccgat tagaccttta tccagctgtt gccaaataat tgatcagatg ctgaatttag  
2100

ataagaatt tgaggtctac attcttggtt gttaatttag agcggttgggt taaagtatgt  
2160

cttcagctg actccagttt aatctcctct gctcattaaa ctgattccag gagattggat  
2220

tgctgtgac tagatacaga tggagcaaattt gtcctaacag agaaatagag gtgatgctgc  
2280

aaagggaga aatgccaggc ggacaaagtt cagtgtcggg aattttcccc gtgacattca  
2340

tggggcatg agattttgga agaagtttt tactttggtt tagtctttt ttccttcctt  
2400

ttattcagc tagaatttct ggtgggttga tggtagggta taatgtgtct gtgttgcttc

## eolf-seql-S000001.txt

2460

taattggctc gaaaggctat cctgcggaaa gtcctgctt cctatctagc atttatttct  
2520

tggcaact tttctttctt ttcttttta aagtaaactt gtgtatttag tcttaactgt  
2580

tttcagtat tttccagcct tatgtgttac attattccaa tgataccaa cagtttattt  
2640

tattatttt tttaaacaaa atttcacagt tctgtaatgt aggcactttt attttcattt  
2700

gatttataat ataaggtaat gtagggttat atttgggagt gactgcaagc atttttccat  
2760

tgtgtgcaa ctaactgact ctgttattga tcccttctcc tgcccttcc caggtatattt  
2820

aattggtca tgtagatattt ttcataga tttaaaaac ttttaggttg ttaccaagta  
2880

gaagtataaa atctgggaa gaggtttat ttacatttttta ggggtggtaa gaaagccacc  
2940

tgttacaaa ttttttaatt tccaaaataa tctatattaa atgagggttt ctgatctgta  
3000

tttgggtttt agtacacctt ttatatttaa aaaataaaaa atgaaaatta cgttcttaca  
3060

gcttaaagc ttgatttgat cttgtttaa atgccaaat gtacttaat gagttactta  
3120

aatgccata aaattgcagt ttcatgtatg tataaatca tgctcatgta tatttagtta  
3180

gtataatgc tttctgagtg agtttactc ttaaatcatt tggtaaatac atttggcttg  
3240

tgttactc cttctgttag ttttaatta aaaactttaa agataagtct acattaaaca  
3300

tgatcacat ctaaagctt atcttgcgt aatctaagta tatgtgagaa atcagaattt  
3360

cataatttgc tcttagttga tattcaaggc tttaaaagtc attattcctg ggcttggtaa  
3420

tgaatttat gagatttact gctctagaaa gtatagatgg cgaaaggacc gttttgtatt  
3480

tttcctgat taccagtctg attataccat gtgtgctaattt atactttttt ttttatagat  
3540

## eolf-seql-S000001.txt

gtcttaatg gtaggtcaag taataaaaag agatgaaata attaaaaaaa aaaaaaaaaa  
3600

:210> 8  
:211> 1434  
:212> DNA  
:213> Homo sapiens

:400> 8  
agcccctgt ctggatgact tctgcggct gttctacccc tccccctccc cgccgtacct  
60

gcactttc tccctccctg cccctctcg agtccaccct ccgggccttc tgccctgat  
120

gcttggttt tccttgcagt cgccctgctgc tgtcgtcggg aggaaagatg aatgggaggg  
180

tgattttcg agagccgaat gcagagggttc caagaccaat tccccacata gggcctgatt  
240

cattccaac agaggaagaa aggagagtct tcgcagaatg caatgatgaa agcttcttgt  
300

cagatctgt gccttggct gcaacaagta tggattac tcaaggatta attagtaaag  
360

aatacttcc aagtcatccc aaatatggtt ccatccctaa acttatactt gcttgatca  
420

gggatactt tgctggaaaa ctttcttatg tgaaaacttg ccaagagaaa ttcaagaaac  
480

tgaaaattc ccccttgga gaagctttac gatcaggaca agcacgacga tcttcaccac  
540

tgggcacta ttatcaaaag tcaaaatatg actcaagtgt gagtggtcaa tcatttttg  
600

gacatcccc agcagcagac aacatagaaa tgcttcctca ttatgagcca attccattca  
660

ttcttctat gaatgaatct gctcccactg gtattactga tcattttgtc caaggacctg  
720

tcccaacct tgaagaaagt cctaaaagaa aaaatattac atatgagggaa ttaaggaata  
780

gaacagaga gtcatatgaa gtatctttaa cacaaaagac tgaccctca gtcaggccta  
840

gcatgaaag agtgccaaaa aaagaagtca aagtaaacaa gtatggagat acttggatg  
900

## eolf-seql-S000001.txt

gtaaaaaat tacatcatgg gacatgaagg agtttcaaca tccagcttca tcttaggtgg  
960  
atgattacc tgcatgctt gagctcagca gcagtttca taaaacacatt taaaacaaga  
1020  
ctgggttt ttgtggtttg acttctatgg tgtttaaaa aaacacagat ttttagtgtt  
1080  
atattgtgt aaatgtactc accttaggaa ttcatttcaa tgatggatt ataccatgt  
1140  
tatacagt ttgtgaaatt gttgcaaggg caaagataac tcttaaaaaa ccgtcgagat  
1200  
caatgctc tagaatcagc atataagaaa ataaatgata tctgcattttt gaattgggg  
1260  
atgggggg agcaagcata atttttaagt gtgaagcttt gcatcaagaa attattaaaa  
1320  
cttttttt ctccagtatt ttctgtatta tcttaatgtt tatggcaaattt aaaaatgtaaa  
1380  
aacatgcc aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa  
1434

?10> 9  
?11> 1414  
?12> DNA  
?13> Homo sapiens

!00> 9  
!attgagga acccatttcc tcattctgca aattgcaaac ctgagggccc aaagaggac  
60  
!gggcttgc caggtctcag caggctgtga gcaagagcta aagcctaattt ctcctgcctt  
120  
!ggctggag ccttccttgt accccagggt cagtgtttt gttggataaca ggcttagatt  
180  
!ctgactgt accctgagaa cctagggag tccctgttcc caattcttct cctacccca  
240  
!ttggcctg atggaggaag accctgctgt gttgagatga gcaccagagc caagaagctg  
300  
!gaggatct ggagaattct ggaggaagag gagagtgttgc tggagctgt acagaccctg  
360  
!tctcaggt cccaggaagg tggcgtcaca tctgcagccg cgtcgacgtt gtcggagcct  
420

## eolf-seq1-S000001.txt

:cgcggagga cccaggagag ccggactagg accagggccc tgggcctccc cacactcccc  
480

:tggagaagc tggcgccctc tacagagccc caagggcctc ggccggtcct gggccgtgag  
540

:tgttcagg tgcccgatga ccaagacttt cgacgttcc ggtcagagtg tgaggctgag  
600

:tggcttggaa acctgaccta tagcaggct ggggtgtctg tctgggtgca ggctgtggag  
660

:tggatcgga cgctgcacaa gatcaagtgc cggatggagt gctgtatgt gccagccgag  
720

:cactctacg acgtcctaca cgacatttag taccgcaaga aatggacag caacgtcatt  
780

:agacttttg acatcgcccg ctgtacatgc aacgctgacg tggcttatta ctccctggagg  
840

:gtcccaagc ccctgaagaa ccgtgatgtc atcacccctcc gtcctggct ccccatgggc  
900

:ctgattaca tcattatgaa ctactcagtc aaacatccca aataccacc tcggaaagac  
960

:tggccgag ctgtgtccat ccagacgggc tacctcatcc agagcacagg gccaagagc  
1020

:gcgtcatca cctacctggc ccaggtggac cccaaaggct ctttacccaa gtgggtggtg  
1080

:ataaatctt ctcagttcct ggctcccaag gcatgaaga agatgtacaa ggcgtgcctc  
1140

:agtaccccg agtggaaaca gaagcacctg ctcacttca agccgtggct gcacccggag  
1200

:agagccgt tgccgagcct ggcgtgtcg gagctgtcg tgcagcatgc ggactcactg  
1260

:agaacatcg acgagagcgc ggtggccgag agcagagagg agcggatggg cggcgcgggc  
1320

:gcgaggggca gcgacgacga cacctcgctc acctgagcga cgcaccgctt cagggacgga  
1380

:acaggaccg gcggagccct gggcgccgg ccgc  
1414

210> 10  
211> 1262

eolf-seql-S000001.txt

:212> DNA  
:213> Homo sapiens

:400> 10  
`ctctcgcgatccctact ggctataaaag gcagcgcccc ggagagctct tgcgcgcttt  
60

tttcttgccct ggtgtcggtg gttagttct gcgacttgc ttgggactgg tgagtgtgg  
120

:agtgcggcc cctgcggagt gaggcgccgc ggcgccttct tgcctgttc ctcttcctcc  
180

cctgtccgg ggcccgcccg cgctcggtg ggggtgctgt gatgcgttag gcagccgggg  
240

aggcccgga gtccgagact gcttgagcgc tgcgcacacc cctctcgtagg gccccccacg  
300

aggtgcggg aacctgggtg aaccccaagc tgataggaag atgtcttcag gaaatgctaa  
360

atgggcac cctgccccca acttcaaagc cacagctgtt atgccagatg gtcagttaa  
420

gatatcagc ctgtctgact acaaaggaaa atatgttgtt ttcttccttt accctttga  
480

ttcaccttt gtgtgccccca cggagatcat tgcttcagt gatagggcag aagaatttaa  
540

aaactcaac tgccaagtga ttgggtgttc tgtggattct cacttctgtc atctagcatg  
600

gtcaataaca cctaagaaac aaggaggact gggaccatg aacattcctt tggtagcaga  
660

ccgaagcgc accattgctc aggattatgg ggtcttaaag gctgatgaag gcatctcggt  
720

aggggcctt tttatcatgg atgataaggg tattctcggt cagatcactg taaatgaccc  
780

cctgttggc cgctctgtgg atgagacttt gagactagtt caggccttcc agttcactga  
840

aaacatggg gaagtgtgcc cagctggctg gaaacctggc agtgatacca tcaagcctga  
900

gtccaaaag agcaaagaat atttctccaa gcagaagtga gcgctggct gtttttagtgc  
960

aggctgcgg tgggcagcca tgagaacaaa acctcttctg tattttttt ttccatttagt  
1020

eolf-seq1-S000001.txt  
aaacacaag acttcagatt cagccgaatt gtggtgtctt acaaggcagg ccttcctac  
1080  
gggggtgga gagaccagcc tttttcctt tgtaggaat ggcctgagtt ggcgttgtgg  
1140  
caggctact ggtttgtatg atgtattagt agagcaaccc attaatcttt ttagttgt  
1200  
ttaaacttg aactgagacc ttgatgagtc tttaaaaaaaaaaaaaaa  
1260  
a  
1262  
  
210> 11  
211> 4108  
212> DNA  
213> Homo sapiens  
  
400> 11  
ctccagcac catgtctggt ttgtctggcc caccagcccg gcgcggccct tttccgttag  
60  
gttgctgct tttgttcctg ctccggccca gattggtcct tgccatctcc ttccatctgc  
120  
catthaactc tcgcaagtgc ctccgtgagg agattcacaa ggacctgcta gtgactggcg  
180  
gtacgagat ctccgaccag tctggggcg ctggcggccct gcgcagccac ctcaggatca  
240  
agattctgc tggccatatt ctctactcca aagaggatgc aaccaagggg aaatttgct  
300  
taccactga agattatgac atgttgaag tgtgtttga gagcaaggga acagggcgga  
360  
acctgacca actcgtgatc ctagacatga agcatggagt ggaggcgaaa aattacgaag  
420  
gattgcaaa agttgagaag ctcaaaccat tagaggtaga gctgcgacgc ctagaagacc  
480  
ttcagaatc tattgttaat gatttgcct acatgaagaa gagagaagag gagatgcgtg  
540  
taccaacga gtcaacaaac actcgggtcc tataacttcag catctttca atgttctgtc  
600  
tattggact agctacacctgg caggtcttct acctgcgacg cttcttcaag gccaagaaat  
660

eolf-seql-S000001.txt

gattgagta atgaatgagg catattctcc tccccacctt tacctcagcc agcagaacat  
720

gctgggacg tgcctggcct aaggcatcct accaacagca ccatcaaggc acgttggagc  
780

ttcttgcca gaactgatct cttttgtgt gggaggacat ggggtaccac ctacacccaa  
840

aagtcaatg agggacttct tttaatttgc gtaggatttt gactggttt gcaacaata  
900

tctattatt agagtcacct atgacaaaaa ataggggtta cctagataat gccaaagtca  
960

catttgtcc cgggttcct ttgtgtatct gtttggacta tgtttcttt tcttctccaa  
1020

ttgctcagc agcttggcct tccattctag ttctttacc aagattttg tgtgaccatg  
1080

tgacttcat ttggattgcc ctcttcaat ttccttgta aaacaccctt aactttctct  
1140

tacccttag ctgaaatgtt tacatagctt ctgggtatat ctttcatga ttttatatct  
1200

ttaaaatgg ttagggatgt gacacctcat aaaagtgagc tttgaactgt agataactct  
1260

aaagaaaaat gtcatttttag acaattaaaa tatttgtgct caactgcttg aactttttc  
1320

tgtatgtgt attaattct atgcaatatt atcacatgtg tagattcatg tgaccaccat  
1380

acaagagac agaacagttc tgtcacatgg atcccttgca ctgcccttt acagccgcag  
1440

ccatccct ttcttataacc ctcacccaa cctgtggcta ccactgttct gtcctccatc  
1500

ctgttaattt tgtcatttca agaatgttgt atgaatggaa tcatacagaa tgtaatctt  
1560

aggctgat ctttttcat tcagcataat tcccttgaaa tccatccaag ttgttgcatg  
1620

atgaatagt ttcttcctt tttctttta aaaatgtttt atatatttag ggggtataag  
1680

acagatttc ttacatgcat atattgcattt gtggtaagt gggggcagtt ccttttgatt  
1740

ctgagtagt attccatggt atggatgtac cacagttgc ttaaccattc acccactaaa

eolf-seql-S000001.txt

1800

gacataaga gttgtttca gtttttgcc ctaataaagc tgctgtgaac attcatgtac  
1860

ggtttttat gtgaacatac atttcattt tctggataa atgctcaaaa gggcaactgt  
1920

gggttgtat ggtaaacaca tatattttg taagaaaacta ccctactttt tttccagagt  
1980

gctctactt ttacataca gccactcata caattcagac agcaatgtat gattgatcca  
2040

tttcttcac atcctcacca gcatttggta ttactactat ttttatctt aaccattcac  
2100

tagatgtgt gtaatgatac cacatgtggt tttaatttgc atttccaatg gctaatgtat  
2160

ttagtatct tttgtgtgc taatttgcca tctatgtatc ctttcggtg aaatgtcttc  
2220

tgtctttg tctatttct atttaggtca tttgttcttt ttactattga gttttgagag  
2280

tttttata tattcttagat aaaattcctc tgtagatat gtggttgctt gaattttaa  
2340

ataacttct accaaggaaa aataagtaaa atttccaacc cttgcatggc cagtcactta  
2400

ttaattcct gtccttcagt gttccatcta gagaattaag agatatgtatg tataaaatag  
2460

catcgaggg ccattaagag agtaaatact taaaaataca tgttatgaaa gcaaagccaa  
2520

aatcactgt aggagtatga gttgcctaag ggccaaaact aatgtaaata agagaaagt  
2580

ggatataaa tgaccattgt ttataaacag tcatgaaaaa tgctgtgact tgaatcttt  
2640

ccacatctc ccaagaaaagt agtaggagt ttatccttc cgtaatctct ttttaaccct  
2700

gtgactatt acaggccttg tttaatcaca gtggcaagaa ttacatgtat cttacagtaa  
2760

jaaacagaa tactggaatc gttagagaac cctgatgtgt tgacctggat aaagtacaaa  
2820

gtgaaagag ggaatgagtt atgctgttaa aatctcaggc tattctgtta atgttcctgc  
2880

## eolf-seq1-S000001.txt

actatgaac ccaaactttt ttttcccccc ttttgactcc ttgtgtcttc ctctccttgtg  
2940

cataaaaagt agttctgtcg ttaacttgtta caacattgcc atctgctgtt gagaattgg  
3000

ggtaactgct tctgagaacc tggctgcaga tccttagcat aggcaagaaa tggtgagaaa  
3060

tctatctgt agtattacat atactaagtt acagaggatg catccaagta gagaaaataa  
3120

atgtgggtt aagatacatc cttaaacttt ttttttttg gggggggggg ggacggagtc  
3180

tgctgcaac gcccaggctg gagtgcaatg gcactatctc agctcgctgc aaccttcacc  
3240

cctgggttc aagcaattct cctgcctcag cctcctgagt agctggaat ataggtgcac  
3300

ccaccatgc ctggctaatt tttgtatTTT cagtagaagc agagttcac catattggcc  
3360

ggttggtct cgaactcctg acctcaagtg atctgcctgc ctcagcctcc caaagtgctg  
3420

gattacacg cgtgagccac cacacccagc ctccatctt aaactttaa atgtggaatt  
3480

ctatcatgt accgttagcc taacaagatt ttcttccta tttctgactg gtgccttcc  
3540

ctttttagg agcaacgaaa gctactctct tagttatgtt cttgtgatgt gacaaaatgt  
3600

aagaagata ggagaagaga atatTTTatt tcgttgatgc tttgttccc aagtgtgacc  
3660

taaacttaa gctttgtagg agttgacatt ctttcatgtc cttcccttt actcatgccg  
3720

aactatcaa ctggacatt ttgtgctttt ggttaaaag ttaattgata ttatactttg  
3780

tttatctta aaaagtaaat gtatttgctt ttgacaaaag actgacacaaa gagcaaataa  
3840

tttaaaaat cgggtgttat gtgccttcct ccattttga gcatattatc caaaatggc  
3900

ttataatataa aatgagaat gatgcagttt aagtaagcct tggtataacca ttgtcatgga  
3960

eolf-seql-S000001.txt  
ccctgtcat aaagccattt ctgggttgt ttggaaaga ggcataatggg atttatacag  
4020  
  
ttcacttgt aaatgttgga ttggggattt ttgtgtaaat tttctcaaat aaaggctagc  
4080  
  
gaaaccgaa aaaaaaaaaa aaaaaaaaa  
4108  
  
210> 12  
211> 5767  
212> DNA  
213> Homo sapiens  
  
400> 12  
agggaggag agttcacttt tacttcagtg tcagcgcg gcgccgtgg ctggctctgg  
60  
  
gagagagca ccgagggagt gggtcgcaga tcttcggcg gctagggaa atcggcgaga  
120  
  
gcgggatcc gagcgcgcg gcgccccgca gagccgcga gcctggccag cgaggtagc  
180  
  
gcggggggc gcgccccggg cggcccccg gagacgcgca ggatgccaca cgaagagctg  
240  
  
cgtcgctgc agagaccccg ctatggctct attgtggacg atgaaaggct ctctgcagag  
300  
  
agatggatg agaggaggcg gcagaacatt gcttatgaat atctgtgcca cttagagggaa  
360  
  
ccaaaaggt ggatggaagt ttgcttagtt gaagaattgc caccaaccac tgaattggaa  
420  
  
aagggctcc ggaatggagt ttaccttgca aagttagcca agttcttgc cccgaaaatg  
480  
  
atcagaga aaaagatcta tcatgtggaa caaacacgtt ataagaagtc tggccttcatt  
540  
  
tcgacaca cagataatac cgtccagtgg ttaagagcga tggagtctat tggctaccc  
600  
  
atgatattt atccagaaac aacagatgtc tatgatcgga aaaacatacc aagaatgata  
660  
  
ttgcattc acgcactgag tttgtatctg ttcaaactag gaatagcacc ccagatccag  
720  
  
tttggttgg gcaaagtaga cttcacagag gagaaatca gtaatatgag aaaagaactt  
780

eolf-seql-s000001.txt  
agaatatacgaaatcagat ggcattttc agcaaaatag gtggattct ggccatgaa  
840  
tgtccgtgg atgaagctgc attacatgct gcagttatag ccattaatga agcagttgaa  
900  
aaggaaatag cagagcaaacc cgttgttaaca ctaagaaacc caaatgcggt tttaacttta  
960  
tggatgaca accttgcacc agaatatcag aaagaactct gggatgccaa aaagaaaaaaa  
1020  
aggaaaaatg caagactgaa gaatagctgt atttcagaag aagaaagaga tgcttatgaa  
1080  
aactgctga cacaaggcaga aatccaaggc aatattaata aagtcaacag gcaggctgca  
1140  
ggaccata tcaatgctgt cattccggaa ggtgaccccg agaatacgct gcttgcactg  
1200  
agaaaccag aggcccagct gcctgctgtt tatcccttg ctgctgccat gtatcagaac  
1260  
aactttca acctccagaa acagaacacc atgaactact tggcccacga ggagctttg  
1320  
tgctgtgg aatgttgc tgctgtgct ttactaaacc aggcttgaa aagcaacgat  
1380  
tgtgtctg tgcagaatca actcagaagc cccgcaatag gcttaaaca tctggacaag  
1440  
atatgtgg aacgttatgc aaacacacta ctctctgtta aactagaagt tttatccaa  
1500  
gcaagata acttaagctg gaatgaaatt cagaattgta ttgatatggt taatgctcaa  
1560  
tcaagaag aaaatgaccg agtttagct gttaggtaca tcaatgaagc tattgatgaa  
1620  
gaatcctt tgaggacttt agaaactttg ctcctaccta ctgcgaatat tagtgatgtg  
1680  
cccagccc atgcccagca ctaccaggat gtttataacc atgctaaatc acagaaactc  
1740  
agactctg agagtgtttc caaagtgcct tggctggatg agatacagca agccgtcgat  
1800  
ggccaacg tggacgagga cagagcaaaa caatgggtta ctctgggttg tggatgttaat  
1860  
gtgtttgg aaggaaaaaaa atcaagtgtt atttgtctg tattgaagtc ttccacttct

## eolf-seql-S000001.txt

1920

atgcaaatg acataatccc ggagtgtgct gacaaatact atgatgccct tgtgaaggca  
1980

aagagctca aatctgaaaag agtgtctagt gacggttcat ggctcaaact caacctgcac  
2040

aaaaatatg actactatta caacactgat tcaaaagaga gttcctgggt cacacctgaa  
2100

catgcttct ataaagaatc atggctcaca ggaaaagaaa tcgaggacat tattgagggaa  
2160

tcacagtag gttacattcg tgagaatata tggtctgctt cagaagagtt gcttcattcgc  
2220

ttcaagcca caagctcagg acccatcctt aggaaagagt ttgaagctag aaaatcattt  
2280

tgcataaac aagaagagaa tgtggtaaaa atacaggctt tttggaaagg atataaaca  
2340

gaaaggagt atatgcacag gcggcaaacg ttcattgata atactgattc tgggtgaag  
2400

ttcagtcct ggttccgaat ggcaactgca agaaagagct atcttcaag actacagtat  
2460

ttagatgtcataatga aattgtgaaa atacagtcac tggtagagc gaacaaagct  
2520

gatgtact acaaaacatt ggttggctct gaaaacccac cattaacagt aattcgcaaa  
2580

tgtataacc tgctggacca aagtgatttg gatttccagg aggaactaga ggttgcacga  
2640

aaaggaaag aagtagtgac caagatcagg gccaatcaac agctggaaaa agacctgaac  
2700

gatggaca tcaagattgg actgctggtg aagaacagga tcacactaga ggtatgtatt  
2760

acacagta aaaagctgaa caagaaaaaa ggaggagaaa tggaaatact gaataacacc  
2820

caacccaag gaataaaaaag tttgagtaag gagaggagaa aaacactaga aacatatcag  
2880

gctgtttt acctttaca gaccaaccct ttatacttgg ctaagctgat ttccagatg  
2940

acagaaca agtccactaa atttatggat actgttattt tcacactata taattatgcc  
3000

## eolf-seql-s000001.txt

:taatcagc gagaagaata tctacttctc aagctttta aaactgctct ggaggaagaa  
3060

:aaaatcaa aagtggacca ggtacaggac atagttactg gtaaccctac agtcatcaag  
3120

:ggtcgtca gcttcaatag aggtgcccg ggacagaaca ccctgcgccca actcctggct  
3180

:agtggtaa aagagatcat cgacgacaag tcgctgatta tcaacacaaa ccctgttagag  
3240

:gtacaagg ctgggtgaa ccaactagaa acacagactg gagaggccag caagttgcct  
3300

:tgtatgtga ccacagaaca agctctaaca tacccagaag tgaaaaataa actggaggct  
3360

:cattgaga acctgagaag ggtcaccgac aaagtccctga attctatcat ttcttccctt  
3420

:tctactgc cttatggatt gaggtatata gccaaagtac tgaagaattc gatccatgag  
3480

:attccccg atgcaacaga agatgagcta ttaaagattt ttggaaacct cctgtactat  
3540

:gtacatga atccagccat tgtagctcca gatggcttg atatcatgaa catgacagct  
3600

:aggtcaga taaattctga ccaaaggaga aacttaggat cagtggccaa ggttcttcag  
3660

:cgcagcct ccaacaagct gtttgaagga gaaaatgagc atctctcatc tatgaacaat  
3720

tttatcag agacgtatca ggaattcagg aaatatttca aagaagcatg taatgtccct  
3780

gccagaag agaagttaa tatggacaaa tacacagacc tggtgacagt cagcaaacca  
3840

catttata tttcaatttga agaaatcatc agcacacact cactcctgtt ggaacaccag  
3900

tgcaattt cccctgagaa aaatgactta ctgagtgaat tgctggggtc gctggagag  
3960

gccaaccg tggaatcttt tcttggggaa ggagcagttg accccaatga ccctaacaag  
4020

aaatacac taagtcagct ttcaaagacc gagatttctc ttgtcttgac aagcaaatat  
4080

eolf-seql-S000001.txt

acatagagg acggtaaagc tatagatagc cgaaggctca tgataaagac caagaagctg  
4140

taattgatg tgatccggaa ccagccaggg aacacattga cagaaatctt agagacacca  
4200

caactgcgc aacaggaggt agaccatgcc acggacatgg tgagccgtgc aatgatagat  
4260

ccaggactc cagaagaaat gaagcatagc caatctatga ttgaagatgc acagctgcct  
4320

ttgagcaga agaagagggaa aatccagagg aatcttcgga cgtttggaca gactggacac  
4380

tgtcatccg aaaataaata ccaagacatt ctcaatgaga ttgccaagga tattcgaaat  
4440

aaagaatct atcgtaagct tcgaaaagct gaattggcaa aacttcagca gaccctgaat  
4500

cacttaaca agaaggcagc attttatgaa gagcaaatca attattatga cacctacata  
4560

agacttgtt tagacaactt aaaaagaaaa aatactcgga gatcaattaa actagatgg  
4620

aaggagaac ccaaaggggc gaagagagcg aagccagtga agtacactgc agcaaagctg  
4680

atgagaaag gtgtcctgct agatatacat gatcttcaaa caaaccagtt taagaatgtt  
4740

catggata tcatacgctac tgaagatgta ggcatttcg atgtaagatc aaaattcctt  
4800

gtgttgaga tggaaaagggt gcaactcaat attcaggatt tacttcagat gcaatatgaa  
4860

jagttagctg taatgaaaat gtttgataag gttaaagtga atgtaaacct tctcatatac  
4920

:gctgaaca agaagttcta tggaaagtga agtgccctaca gaaatttctt ggattctgt  
4980

:atctggat taggaaaatga atttgtttaa tattttgtt tttaaacatg attgaaaatca  
5040

:gcttataa atgtgtgatt ttttttaat gaccaaaact gttctgaaga atgtacccag  
5100

:gcctttt gctaatttga tactataata gaatgagaca taaaatgaat taatggaaac  
5160

:atccacac tgtactgtga tataggtaact ctgatttaaa actttggaca tcctgtgatc

## eolf-seql-S000001.txt

5220

:gttttaaaag ttggggggtg ggaaatttag ctgactaggg acaaacatgt aaacctattt  
5280

:cctatgaaa aaagtttaa atgtcccact tgaataacgt aattcttcat agttttttta  
5340

:tctatggat aaatggaaac ctaattattt gtaatgaatt atttagacag ttctaagccc  
5400

:gtcttctgg gagttatcaa tttaaagag aacttttgt caattcaa at gaagttttta  
5460

:aagtaattt gaaaatgacaa cacaataaca ctttctgtat aaaagtatat attttatgtg  
5520

:tttattcct actaaatgaa agtgcactac tgcctcatgt aaagactctt gcacgcagag  
5580

:ctttaagtg actaaggaac aacatagata gtgagcatag tccccacctc cacccctcac  
5640

:atttatttg aataacttcaa ttgtgcctct caatttttg taatgctaaa aaatcagttat  
5700

:tagatggtt tttaaatgta ttctctggaa attgttttat gtaaaataaa tgtaacttaa  
5760

tccatt  
5767

210> 13  
211> 1148  
212> DNA  
213> Homo sapiens

400> 13  
ctcggtcgg gcgctgtctc cctcggtctc gcgggtgtca gttcgtccgg ctccctcaca  
60

ccctcact cccggcggtc gacagcagca gcggcggtcg cggtcggtcg ctggcgtttc  
120

aggctgagc ggcaccgggg ttggggcgcg gaggaggagc agcagcgaaa ggaggagccg  
180

gtgccctgg cactgagcgg ccgcggccat ggcgtacgcc tatctcttca agtacatcat  
240

atcggcgac acaggtgttg gttaaatcatg cttattgcta cagttacag acaagaggaa  
300

cagccagtg catgacacctta ctattggtgt agagttcggt gctcgaatga taactattga

## eolf-seql-S000001.txt

360

:gggaaacag ataaaacttc agatatggga tacggcaggg caagaatcct ttcgttccat  
420

:acaaggctcg tattacagag gtgcagcagg agctttacta gtttacgata ttacacggag  
480

:gatacattc aaccacttga caacctgggtt agaagatgcc cgccagcatt ccaattccaa  
540

:atggtcatt atgcttattg gaaataaaag tgatttagaa tctagaagag aagtaaaaaaa  
600

:gaagaaggt gaagctttg cacgagaaca tggactcatc ttcatggaaa cgtctgctaa  
660

:actgcttcc aatgtagaag aggcatttat taatacagca aaagaaattt atgaaaaaat  
720

:caagaagga gtcttgaca ttaataatga ggcaaattggc attaaaattt gccctcagca  
780

:gctgctacc aatgcaacac atgcaggcaa tcagggagga cagcaggctg ggggcggctg  
840

:tgtttagtc tgttttact gtctagctgc ccaacggggc ctactcaattt attctttcac  
900

:ccctctcct cctgctcagc tgagacatga aactatttga aatggcttta tgtcacagaa  
960

:actttaatc cgtcaaattc ttgtataact ttgaataat ggttaatgtt cactaaaaag  
1020

:cagattttg gagattgtat tcatatctat ttgcatttga tttctaggc aattgtatgt  
1080

:ttatTTTG ttaaatgtg tcttgtcccc ttaactacga actgaattgtt attaaacact  
1140

caaagt  
1148

210> 14  
211> 1814  
212> DNA  
213> Homo sapiens

400> 14  
caaaaccaa cgcctggctc ggagcagcag cctctgaggt gtccctggcc agtgtccttc  
60

acctgtcca caagcatggg gaacatcttc gccaacctct tcaagggcct ttttggcaaa

## eolf-seql-S000001.txt

120

aagaatgc gcacccat ggtggcctg gatgctgcag ggaagaccac gatcctctac  
180

agcttaagc tgggtgagat cgtgaccacc attccacca taggcttcaa cgtggaaacc  
240

tggagtaca agaacatca gttcactgtg tggacgtgg gtggccagga caagatccgg  
300

ccctgtggc gccactactt ccagaacaca caaggcctga tcttcgttgt ggacagcaat  
360

acagagagc gtgtgaacga ggcccgttag gagctcatga ggatgctggc cgaggacgag  
420

tccggatg ctgtcctcct ggtgtcgcc aacaagcagg acctccccaa cgccatgaat  
480

ggccgaga tcacagacaa gctgggctg cactcactac gccacaggaa ctggtagatt  
540

ggccacct gcgccaccag cggcgacggg ctctatgaag gactggactg gctgtccaaat  
600

gctccgga accagaagtg aacgcgaccc ccctccctct cactcctt gcctctgct  
660

cactctcat gtggcaaacg tgccgctcg ggtgtgagtg ccagaagctg cctccgttgt  
720

ggtcacccg tgtgcacatcg accgtgctgt aaatgtggca gacgcagcct gcggccaggc  
780

tttattta atgtaaatag ttttgttcc caatgaggca gtttctggta ctcctatgca  
840

attactca gctttttta ttgtaaaaag aaaaatcaac tcactgttca gtgctgagag  
900

gatgttagg cccatggca cctggcctcc aggagtcgt gtgttggag agccggccac  
960

ccttggt tagagctgtg ttgaaatcca tttgggttgt tggttttac ccaaactcag  
1020

catttttt aaaatagtta agaatccaag tcgagaacac ttgaacacac agaagggaga  
1080

ccgccttag catagatttgc cagttacggc ctggatgcca gtcgccagcc cagctgttcc  
1140

tcgggaac atgaggttgtt ggtggcgcag cagactgcga tcaattctgc atggcacag  
1200

## eolf-seql-S000001.txt

aagagatccc cgcaactcgc ttgtccttgg gtcaccctgc attccatagc catgtgcttg  
1260

:ccctgtgct cccacggttc ccaggggcc a ggctgggagc ccacagccac cccactatgc  
1320

:caggcccgc cctacccacc ttcaggcagc ctatgggacg caggccccat ctgtccctcg  
1380

:cccgctgt ggccagagtg gtccgtcgtc cccaacactc gtgctcgctc agacactttg  
1440

:aggatgtc tggggcctca ccagcaggag cgcgtgcaag ccgggcaggc ggtccaccta  
1500

:ccccacagc ccctcgggag caccccacct ctgtgtgtga tgtagcttgc tctccctcag  
1560

:tgcaaggg tccgatttgc catcgaaaaa gacaacctct actttttct tttgtatTTT  
1620

:taaacact gaagctggag ctgttaaatt tatcttgggg aaacctcaga actggcttat  
1680

:ggtgtcgt aggaacctct tactgcttgc aatacacgtat tagtaatcaa ctgtttgt  
1740

:cttggttt cagtttcat ttcgacaaac aagcactgtt attatacgta tttagataaaa  
1800

:ctcttaac tatt  
1814

?10> 15  
?11> 2912  
?12> DNA  
?13> Homo sapiens

!00> 15  
!gttgcattc agcgccccgg tgtggctgtg ccgttggtcc tgtgcggtca cttagccaaag  
60

.gcctgagg aaacccagac ccaagaccaa ccgatggagg aggaggaggt tgagacgtt  
120

:ctttcagg cagaaattgc ccagttgtatgc tcattgtatca tcaatacttt ctactcgaac  
180

.agagatct ttctgagaga gctcatttca aattcatcag atgcatttga caaaatccgg  
240

.tgaaactt tgacagatcc cagtaaatta gactctggga aagagctgca tattaacctt  
300

## eolf-seql-S000001.txt

taccgaaca aacaagatcg aactctcact attgtggata ctggaattgg aatgaccaag  
360

ctgacttga tcaataacct tggtaactatc gccaaagtctg ggaccaaaggc gttcatggaa  
420

ctttgcagg ctggtgcaga tatctctatg attggccagt tcgggtttgg ttttattct  
480

cttatttgg ttgctgagaa agtaactgtg atcaccaaac ataacgatga tgagcagtag  
540

cttgggagt cctcagcagg gggatcattc acagtgagga cagacacagg tgaacctatg  
600

gtcgtggaa caaaaagttat cctacacctg aaagaagacc aaactgagta ctggaggaa  
660

jaagaataa aggagattgt gaagaaacat tctcagtttta ttggatatcc cattacttt  
720

tgtggaga aggaacgtga taaagaagta agcgatgtatg aggctgaaga aaaggaagac  
780

agaagaag aaaaagaaaa agaagagaaa gagtcggaag acaaacctga aattgaagat  
840

ctggttctg atgaggaaga agaaaagaag gatggtgaca agaagaagaa gaagaagatt  
900

ggaaaagt acatcgatca agaagagctc aacaaaacaa agcccatctg gaccagaaat  
960

cgcacgata ttactaatga ggagtacgga gaattctata agagcttgac caatgactgg  
1020

agatcact tggcagtgaa gcattttca gttgaaggac agttggatt cagagccctt  
1080

atttgtcc cacgacgtgc tccttttatctgat ctgtttgaaa acagaaagaa aaagaacaat  
1140

caaattgt atgtacgcag agtttcatc atggataact gtgaggagct aatccctgaa  
1200

tctgaact tcattagagg ggtggtagac tcggaggatc tccctctaaa catatcccgt  
1260

gatgttgc aacaaagcaa aattttgaaa gttatcagga agaatttggt caaaaaatgc  
1320

agaactct ttactgaact ggcggaagat aaagagaact acaagaattt ctatgagcag  
1380

eolf-seql-S000001.txt  
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1440  
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?11> 3369  
?12> DNA  
?13> Homo sapiens  
  
!00> 16  
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60  
!ggcgccgc ggggaggcgt cccagagtct cactctgccg cccaggctgg actgcagtga  
120  
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240  
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.atgttaat tttctaattt agaatgttgg cgctgtccga acctggagac agaaaaacaa  
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## eolf-seql-S000001.txt

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600

gaacatact agaagtccct tctgcttagga caacgaggat catggagac cacctggacc  
660

tctcctagg agtgttgctc atggccggtc ctgtgttgg aattccttcc tgctccttg  
720

tggccgaat agcctttat cgtttctgca acctcaccca ggtccccag gtcctaaca  
780

cactgagag gtcctgctg agcttcaact atatcaggac agtcactgct tcatacattcc  
840

ctttctgga acagctgcag ctgctggagc tcgggagcca gtataacccc ttgactattg  
900

caaggaggc cttcagaaac ctgcccaacc tttagaatctt ggacctggga agtagtaaga  
960

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1020

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1140

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1200

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1260

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1440

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1500

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1560

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1620

eolf-seql-s000001.txt

eof-seql-S000001.txt  
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2880  
  
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2940  
  
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3000  
  
catcatggt ggtggttggg tccttgtccc agtaccagtt gatgaaacat caatccatca  
3060  
  
aggctttgt acagaaacag cagtatttga ggtggcctga ggtatccag gatgttggct  
3120  
  
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211> 2855  
212> DNA  
213> Homo sapiens  
  
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120  
  
gtttggac atatttgact cttttccccc caggtgaat tgaccaaagc aatggtgatg  
180  
  
gaaggccta gtcccctgct ggccggcgg gaatttgcgtgac gacagtattt cacactgctg  
240

eolf-seql-S000001.txt

taaccaggccc cagacatgct gcatacatgtt tatggaaaga actcttctta tgtccatgg  
300

tgattggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg  
360

taaagtatgtt cacaaaactt caccaactgc cacaccaaga ttgcgccatgt tgatgctcat  
420

cccacgctaa atgatggtgtt ggttagtccag gtgatgggc ttctctctaa caacaaccag  
480

tctttgagga gattcatgca aacgtttgc cttgctcctg aggggtctgt tgcaaataaa  
540

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600

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660

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720

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780

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900

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960

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1080

gagaacaac gaataaaatat tcctccccaa aggggaccca gaccaatccg tgaggctgg  
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1200

ttggcaacc tgcctcatga agtggacaaa tcagagctta aagatttctt tcaaagttat  
1260

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1320

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## eolf-seql-S000001.txt

1380

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1680

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1800

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1860

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1920

cattggta tgtttcattt attggaatat ttcttatttt ctacgtgtt gaaaagcctg  
1980

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2040

gagagtcat gactacccctc tgggtgtggag aaattgccat tggaaaattt gacaattttg  
2100

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2460

## eolf-seql-S000001.txt

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2760

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2855

210> 18  
211> 2128  
212> DNA  
213> Homo sapiens

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120

cacaagtgc aaaggagat tgtgaataag cacaatgaac tgaggagagc agtatctccc  
180

ctgccagaa acatgctgaa gatggaatgg aacaaagagg ctgcagcaaa tgcccaaaag  
240

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## eolf-seql-S000001.txt

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cctcctgca attgttcaaa cagcatttat taaatacgca ttacacacccg agtagggcta  
780

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840

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900

tgcTTTTA ttttacaaaa atatTTTCA tacaaatggT taaaaagaaa caaaatctat  
960

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1320

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1920

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1980

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2040

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2100

aaaaaaaaa aaaaaaaaaa aaaaaaaaa  
2128

210> 19  
211> 1428  
212> DNA  
213> Homo sapiens

400> 19  
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240

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300

ctaacatcc tggatttttt tcctggagga aaagtgatag atgacaacga ccaccttcc  
360

aaagagatct ggttttcgg aggaatatta ggaagcggtg tcttgcgtat cttccctgct  
420

eolf-seq1-S000001.txt  
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1080  
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1140  
1200  
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1260  
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1428  
?10> 20  
?11> 2948  
?12> DNA

eolf-seql-S000001.txt

:213> Homo sapiens

:400> 20  
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gcagattca aacaaatagc agcgaacagg gaatgacagt tccaccagaa gacgattaag  
120

cacagcctc taatttggAAC ggcatttgta cagtcagaga ctcttaccag acatctccag  
180

aatctgtga gccattgtca aaacgtccat tttcatctgg ctgtgaaagt gaggaccaca  
240

caggtaggt attggtagaa acaggagtcc tcagagaagc cccaagatgc agcctgaggg  
300

gcagaaaaag ggaaaaagct tcaaggcagag actggcttg aagagcagct tagcgaaaga  
360

accctctct gagttcttgg gcacgttcat cttgattgtc cttggatgtg gctgtgtgc  
420

caagctatt ctcagtcgag gacgtttgg aggggtcatc actatcaatg ttggattttc  
480

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540

gctgtgtct ttagcaatgt gtctcttgg acggatgaaa tggttcaaataat tgccatttt  
600

gtgggagcc cagttcttgg gagccttgtt gggggctgca accgtcttg gcattacta  
660

gatggactt atgtccttg ctggtgaaa actgctgatc gtgggagaaa atgcaacagc  
720

sacattttt gcaacataacc cagctccgtta tctatctctg gcaacgcattt ttgcagatca  
780

gtggatggcc accatgatac tcctcataat cgtcttgcc attttgact ccagaaactt  
840

ggagcccccc agaggcctag agcccattgc catcggcctc ctgattattg tcattgcttc  
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ccctggga ctgaacagtg gctgtgccat gaaccagct cgagacctga gtcccagact  
960

tcaactgcc ttggcaggct gggggtttga agtcttcaga gctggaaaca acttctggtg  
1020

tttcctgtta gtggggccctt tggttggatgc tgtcatttggaa ggcctcatct atgttcttgt

## eolf-seql-S000001.txt

1080

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1140

ccagagaaa tatgaactca gtgtcatcat gtagtggcat gctcagctct ggatttgcag  
1200

cagttggg attctttca gaaagatggc atctaagtgt ctgtgttctt gtaaggctga  
1260

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1320

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1380

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1500

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1560

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1620

gtcaacata ttcatgaatt agggagctaa tgggttaagc ttccagttcc cgctatgcta  
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1740

gctggaagg cacaagggga ggacatttg gcattcagaa actgcaggag acaagatgaa  
1800

ttgagaagc caaatggaat tttatgga aaccatttat cagattaatc tcttgctctc  
1860

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1920

atgttaacc tcagtcataaaaatcatc actctgtctt tttagctaa atgtatTTTC  
1980

taattgccc acttgagaac agacatttga caagttataat caacgactgt gcttgcct  
2040

attttacac atgcctaga agccaaaact gaaagccact ggatcctggt ctagctgaat  
2100

tcagagtggaggtctcc aaaaagatatac tacttatttggcttaacaa ttcacaaggc  
2160

## eolf-seql-S000001.txt

cttcacac ccattatcta attaatcct cataatgact atgtgaggca aatgccacat  
2220

gcccatttt tcagataaaag aaacaaaatc ttagggaaga taagttgagt tgtccaagag  
2280

acactgaaa gttgaatgtt atctaattgc ttcctctacc tttcagaaga tcagtagctg  
2340

ctgagaatc tttgccaaat cttccttgct agccagaagt ggaattggca gcttctagaa  
2400

atgtacacc tctggacaaa atgttcctca atcttaagat acaaagaccc tcattgtctg  
2460

gtctattcc cacacttact gagtacagat gaaggaaagt ggttagcaatt taatcataac  
2520

ttcatttgc tgaaaaacat tatgagaagg cttcccttcc taagccacct ctggtcttgc  
2580

aagtcttga tcttgcttcc tgccagcacc aaacattaca ttcagggat ttccctctggc  
2640

gtgttttt ccccttgaag ttctctaata gatgttactt ttgacaaaag atgcctatg  
2700

gttacaagc accagggat gctctacatc aaggatgca cttcagtca aactgtcaaa  
2760

agcccgaa ttcccaaagg cattaggttt cccaactgct ttgtgctgat atcagaacag  
2820

agaaattaa atgtgaaatg tttctgatga cttatgttct acaatctatg gacatacggg  
2880

:tttttttt ctgctttga agtacactgg atatttccta tttgaaataa aattgttcgg  
2940

:attgtt  
2948

?10> 21  
?11> 2270  
?12> DNA  
?13> Homo sapiens

!00> 21  
:acggagac ctcgcaggct cccggaactg tcgccccttcc aggatgtggc tccctgctct  
60

:tcctggcc actctcgctg cttccgcggc ttgggcagtg catccgtcct cgccacctgt  
120

## eolf-seql-S000001.txt

tgtggacacc gtgcattggca aagtgttggg gaagttcatc agcttagaag gatggcaca  
180

cctgtggcc gtttcctgg gaatccctt tgccaagccc cctttggac ccctgagg  
240

.actccaccg cagcctgcag agccgtggag ctttgtgaag aatgccacct tgtaccctcc  
300

.atgttcacc caagatccaa ggcccccccc gcagttaatc tcagagctat ttacaaaccg  
360

.aaagagaac attcctctca agcttctga agactgtctt tacctaata tttacactcc  
420

gctgacttg accaagaaaa acaggctgcc ggtgatggtg tggatccacg gggggggct  
480

atggtggt gcggcatcaa cctatgtgg gctggccctt gctgcccattt aaaaacgtgg  
540

gtggtgacc attcaatatc gcctggcat ctggggattc ttcagcacag gggatgaaca  
600

agccccggg aactggggtc acctggacca gctggctgcc ctgcactggg tccaggacaa  
660

attgcacgc ttggaggga acccaggctc tgtgaccatc ttggagggt cagcgagg  
720

gaaagtgtc tctgttcttg tttgtctcc attggccaag aacctttcc accggccat  
780

tctgagagt ggcgtggccc tcacttctgt tctggtaag aaaggtgatg tcaagccctt  
840

gctgaggta ggtctccggc tggtaacgtct ctggctggac acccacacacct cttggctct  
900

tgctcctga atcctcaggg atctcttttg tggttggttt tagctaattgt tctccttagaa  
960

cactgaggc accaatggct gagcaggaag ggcgaggaga caccttgcattt agcgccccag  
1020

ttcacagcc aggcaaaccg acacaggct tggaaaggat ttggccaaggc cagcaggta  
1080

ccgggcaga gctggactc cagctcatgg ccctagcagc cagtagtgc ccctgtctgt  
1140

accacactc cacatatgtc ccagggcctg gtgccatgtt gggcagtgtat ggtgtttgt  
1200

eolf-seql-S000001.txt

jtcttcagg gtctgagttc tgtggaccca cttgtggct gtgggcctga agcagttcca  
1260

:actgagcgc ctgataacca gggttggttc ctggagaatt cactcattga ttcatttgg  
1320

:acacaacaa aactaggta ctaagtgaag gcaaaaacaa gaaatggca gacgtcatcc  
1380

.ttggctcaa agccagatgt ccgtgtggag gggacataga cactgcatgg gccctatgtg  
1440

:ctctgcatt ctagtcagac atctaaccacc tccccaaagct tcttgctata atgttaggaat  
1500

.gatgaatag ctacagaatc acacaactag aaagtgtcac ctatgacaag agcagtgaag  
1560

tgaggtact tgctgccaca gcagaatcta aagaaagcat tgagtcctgg ggctggacga  
1620

:gttaccagg gaaggcttgc ttggaaaagt gactaatgag tcaggagcaa ggaacgtcca  
1680

:ggagtggga gcagcacatg cgctgtgtgt ggcaggagga cgcatccaa tcgggaggga  
1740

agacagaga cagagccat gggccagag caggcagaac aggccgagca cggcgagtag  
1800

gacagaggg gacgttggga gggccaccc tgcacaggac cctggcaagg attttgtcat  
1860

atctggaga gtggttgaaa gccaaaggaa gaggtgatcg ataggaatcc agacctaggc  
1920

gaggatcgc ccactggagc cagtggcatg gaggattcg gtagattga aagcttgttt  
1980

gggaaagca tccaaattta aaggccgggt acataggagg agagaaaatg gggatgccaa  
2040

aatttttag aatttttgag aatttttaa gaattcattg gttataagca acagttgcc  
2100

ttgaccaga cttaagtcaa gaaggagcat tagcctggtg tggtggtca tgcctgtaat  
2160

cctgcaatt tgggagacca aatgagaagg attgcttgag cccaggagtt tgagaccagc  
2220

agggcaaca aagtgatacc ctgtctctac aaaaaaaaaa aaaaaaaaaa  
2270

eolf-seq1-S000001.txt

:210> 22  
:211> 674  
:212> DNA  
:213> Homo sapiens

:400> 22  
:cccttggtt ccgcccgcgc gtcacgtgac cccagcgctt acttgggctg aggagccgcc  
60  
  
:cgcccccttc gccgagtcgc ctcgccagat tccctccgtc gccgccaaga tgcgtgcgg  
120  
  
:gcgcgcctcc gccacgcagc cggccaccgc cgagacccag cacatcgccg accaggtag  
180  
  
:tcccaagctt gaagagaaaag aaaacaagaa gttccctgtt tttaaggccg tgtcattcaa  
240  
  
:agccaggtg gtcgcgggga caaactactt catcaaggtg cacgtcgccg acgaggactt  
300  
  
:gtacacctg cgagtgttcc aatctctccc tcatgaaaac aagcccttga ccttatctaa  
360  
  
.taccagacc aacaaagcca agcatgatga gctgacctat ttctgatcct gactttggac  
420  
  
:agcccttc agccagaaga ctgacaaagt catcctccgt ctaccagagc gtgcacttgt  
480  
  
:atcctaaaa taagcttcat ctccgggctg tgcccttgg ggtggaaagg gcaggattct  
540  
  
:cagctgctt ttgcatttct cttcctaaat ttcattgtgt tgatttctt cttcccaat  
600  
  
:ggtgatctt aattactttc agaatatttt caaaatagat atattttaa aatccttaaa  
660  
  
:aaaaaaaaaaa aaaa  
674

210> 23  
211> 3189  
212> DNA  
213> Homo sapiens

400> 23  
:gcgtgagcg gcgaaagccg ggagggcgag cgagagagca agcaggcagc aggctgccgg  
60  
  
:gggcgggctg gacggcacag agggagggag cgagcgagca gtgagtaagc cagcaagggc  
120

eolf-seql-S000001.txt

gtcgggtcc cgaggtcagc cgagattct caggtccctc cggccccctc cctggagtcc  
180

cagcgccctc cggtgtccag aggatcgac acggcccgac ccggccatgg cctcggtgct  
240

aaggtagat caggaagtga agctaagggt tgatttttc agggagcggta tcacaagtga  
300

gcagaagac ttggtgccaa atttttccc aaagaagtta ttagaacttg atagtttct  
360

aaggaacca atcttaaaca tccatgaccc aactcagatc cactctgaca tgaatctccc  
420

gtccctgac cccattctc tcaccaatag ccatgatggta ctggatggtc ccacttataa  
480

aagcgaagg ttggatgagt gtgaagaagc cttccaagga accaagggtgt ttgtgatgcc  
540

aatggatg ctgaaaagca accagcagct ggtggacatt attgagaaag taaaacctga  
600

atccggctg ttgattgaga aatgtaacac ggtcaaaatg tgggtacagc tcctgattcc  
660

aggatagaa gatggaaaca actttgggt gtccattcag gaggaaacag ttgcagagct  
720

agaactgtt gagagtgaag ctgcattta tctggaccag atttctagat attatattac  
780

agagccaaa ttggttcttta aaatagctaa atatccccat gtggaggact atcgccgcac  
840

gtgacagag attgatgaga aagaatatat cagcattcggt ctcattat cagagctgag  
900

aatcaatat gtcactctac atgacatgtat cctgaaaaat atcgagaaga tcaaacggcc  
960

cggagcagc aatgcagaga ctctgtactg aggccagggc cagggccagg ggactctgtg  
1020

gtctggctc aagaccgaca ttgccttggt ttgttacatg actatcgta tggggaaact  
1080

gtctggaaat agtaatcaca cctctctgtt ttttagttttaga gtctaattgaa actctcatct  
1140

tttctgtga tgtgtttacc tctttttca ggcctcagga actcttctat ttccctccct  
1200

atccccac acccaacccctg tcgtaatttc tggagaactc caggtttgtg tgtgcaggat

## eolf-seql-S000001.txt

1260

ttggcacaa aaataacctgt gtttcattc tccccctctc tccctcctgt gtcttgcgt  
1320

tatgtttc ttccgttga taatttagttg gttaaaagct gagggAACCG gaaggaaagt  
1380

ctagggttt ttttaggaac tagggtggcg gggggacgaa cttctcttcc tcacatgagg  
1440

tactgtttc ttccctctgt gggcattgg atcctcccac agttgcctg gtgatgactt  
1500

gggcttccc atctgtgtac atcccactt gaatcttgat cgtgacaaga aataccttag  
1560

ccttcagtc aattccgaag ctccctcagt tgttttata atgggcgtt tcacatgcac  
1620

tatgtgtat gcatgtatac gcccatacag acatgcacac acagactcct actccattag  
1680

taacataacc ctccctctcc acaacccctg tcacataacct ttcaggaggt gacagttgtc  
1740

tagttgtca tctacccaga caaacgtcct gggccgtcc tccctcctga tactgttagcc  
1800

cttggtaacc cagggtgagt tggtgagaa cagagagatg agaagcagag ggcttgggga  
1860

agcctgttc ctctctgact cagcccttt tggcattatt gcaagagctt gactcctgg  
1920

gcctttcc cagccagtt tcagttgggg tgaaggttc tgcaagtgtg aggtccagat  
1980

ctgctgctc atgttggct ttcctttgg gaactatttc tctttatTTA tagtgcggg  
2040

ttccgggaa aagcaatcat tggtgtgtat gtgtatgtgc atgcacacac gtgcataaac  
2100

atattgtgt atgtggaaat gtgctggca agtcaaaact atagaagagt tgccctcgt  
2160

:ctcgaatc ttccagagat atcacttaat tgttaacagc ttttgttta atcccattca  
2220

:cccttagct cttttattct accacggctg gagagttgat acctgcagtc agcctgccag  
2280

:actcttag tgtctgtttc tgacttattt ttcctgtctc tgtcttccaa cccccaataa  
2340

## eolf-seql-S000001.txt

atttccacc ggggatgcat cattttact cccaatattc tgttagagagg gagtcaggat  
2400

ctgtttccc cacgaatagt actcagtaac aaaccaattt cattttagtt gggcagtgt  
2460

ccaccacc ctccagatcc ctccagcta aaacccttcc ccctccctc catgtgtttc  
2520

cagttccc gtttcgtttg ttggactgtt ccactgcccc tcctcctcac cctatcaccc  
2580

tggatcgta atgtaaaatt ctttaccat gtcaagaaat tattaaaaat acaggtactt  
2640

gacctttt ctaaagccgc agaccctggt gcaatgctct ggtggcttagg gatgtactca  
2700

gctcatatg tgtgcacgct tggacaccca cctccatgga cacctagcca ccctgttgt  
2760

gtccttatg ccagttgagc tgaatctttt ccccaagtata gtggaaagac tgaggcttct  
2820

cctactgag caagggttggg tgcttcattt gtgttcagtc tgaattatgg gaaagttagc  
2880

cttcccaga cctaagctgc cttctctccc tactttcaga agatcctagt tccttccttc  
2940

cgagtgata cccatgaact gccagtagag gctgctatcg ttccatgtgt aaggaatgaa  
3000

tggttcaag ggcgcgtccta cccagtcatt ttctttaccc tatactaatt ctccctgaat  
3060

atgtcttca gtttcttgag gagactccta gttttggttt tcaaattact tggaggcgt  
3120

cttaggaatc tatctccctc taaaataaaag tttcctcata ttccacccctg caaaaaaaaa  
3180

aaaaaaaa  
3189

?10> 24  
?11> 3338  
?12> DNA  
?13> Homo sapiens

100> 24  
:cagcccgcccccggccccggctgcgc acgcgacgcc ccctccaggg cccgctcctg  
60

## eolf-seql-S000001.txt

:gccctattt ggtcattcg gggcaagcg gcgggagggg aaacgtgcgc ggccgaagg 120  
|aagcggagc cggcgccggc tgcgcatagg agccgctctc gccgcccaca cctcggtgg 180  
|agccccacga ggctgccgca tcctgccctc ggaacaatgg gactcggcgc gcgagggtgt 240  
.ggccgcgc tgctcctggg gacgctgcag gtgctagcgc tgctggggc cgcccatgaa 300  
.gcgcagcca tggcggagac tctccaacat gtgccttctg accataaaaa taaaacttcc 360  
.acagtactg taaaaccacc aacttcagtt gcctcagact ccagtaatac aacggtcacc 420  
.ccatgaaac ctacagcggc atctaataca acaacaccag ggttgtctc aacaaatatg 480  
cttctacca ccttaaagtc tacacccaaa acaacaatgg tttcacagaa cacatctcag 540  
tatcaacat ccacaatgac cgtaacccac aatagttcag tgacatctgc tgcttcatca 600  
taacaatca caacaactat gcattctgaa gcaaagaaag gatcaaaatt tgatactggg 660  
gcttggttg gtggatttgt attaacgctg ggagtttat ctattctta cattggatgc 720  
aatgttatt actcaagaag aggattcg tatcaacca tagatgaaca tgatgccatc 780  
tttaaggaa atccatggac caaggatgga atacagattt atgctccct atcaattat 840  
ttggtttat taatagtttta aaacaatatt ctcttttga aaatagtata aacaggccat 900  
catataatg tacagtgtat tacgtaaata tgtaaagatt cttcaaggta acaagggttt 960  
ggtttgaa ataaacatct ggatcttata gaccgttcat acaatggtt tagcaagttc 1020  
tagtaagac aaacaagtcc tatcttttt ttttggctg gggtggggc attggtcaca 1080  
atgaccagt aattgaaaga cgtcatcact gaaagacaga atgccatctg ggcataaaaa 1140

eolf-seql-S000001.txt  
aagaagttt gtcacagcac tcaggatttt gggtatcttt tgtagctcac ataaagaact  
1200  
  
cagtgcctt tcagagctgg atatatctta attactaatg ccacacagaa attataacaat  
1260  
  
aaactagat ctgaagcata atttaagaaa aacatcaaca tttttgtgc tttaaactgt  
1320  
  
gtagtttgt ctagaaacaa aatactccaa gaaaaagaaa attttcaaatt aaaacccaaa  
1380  
  
taatagctt tgcttagccc tgtagggat ccattggagc attaaggagc acatatttt  
1440  
  
ttaacttct tttagcttt caatgttgat gtaatttttgc ttctctgtgt aatttaggtt  
1500  
  
actgcagtg tttaacataa taatgtttt aagacttagt tgtcagttt aaataatcc  
1560  
  
gcattatag ggaaaaaacc tcctagaagt tagattattt gctactgtga gaatattgtc  
1620  
  
ccactggaa gttacttttag ttcatttat tttaattttt tattttgtga atatttttag  
1680  
  
actgttagag ctgcttcaa tatctagaaa ttttaatttgc agtgtaaaca cacctaactt  
1740  
  
aagaaaaaag aaccgcttgt atgattttca aaagaacatt tagaattcta tagagtcaaa  
1800  
  
ctatagcgt aatgctgtgt ttatataagcc agggattgtg ggacttcccc caggcaacta  
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1920  
  
ggaaatgac atttttatac taaaacaaac accaaaaatattt ttttagaataa attcttagaa  
1980  
  
gttttgaga ggaatttttta gagaggacat ttccctccctt ctgatttgaa tattccctca  
2040  
  
atccctccctt cttactccat gctgaaggag aagtactctc agatgcattt tgttaatgg  
2100  
  
aagaaaaaagc acagtatttgt agagacacca atattagcta atgtatTTTg gagtgttttc  
2160  
  
attttacag ttttatattcc agcactcaaa actcagggtc aagttttaac aaaagaggtt  
2220  
  
gtatgcaca gtaaataacta agatggcatt tctatctcag agggccaaag tgaatcacac

eolf-seql-S000001.txt  
2280

:agtttctga aggtcctaaa aatacgctcag atgtcctaat gaacatgcac ctacattaa  
2340

:aggagtaca ataaaaactgt tgtcagctt tggtttacag agaacgctag atattaagaa  
2400

.tttggaaatg gatcatttct acttgctgtg catttaacc aataatctga tgaatataga  
2460

.aaaaatgtat ccaaaatatg gatatgattt gatgtatgtt acacatacat ggagtatgga  
2520

:gaaattttc tgaaaaatac atttagatta gtttagttt aaggagaggt gggctgtatgg  
2580

:tgagttgttga tgttactaac ttggccctga ctgggtgtgc aaccattgct tcatttctt  
2640

:caaaatgtat gttaagatattt actttatttctt aatgaaggcc ttttaaattt gtccactgca  
2700

tcttggtat ttcactactt caagtcagtc agaacttcgt agaccgacctt gaagtttctt  
2760

ttgaataact tgtttctta gcactttgaa gatagaaaaaa ccactttta agtactaagt  
2820

atcatttgc cttgaaagtt tcctctgcat tgggtttgaa gtagtttagt tatgtcttt  
2880

ctctgtatg taagtagtat aatttgttac tttcaaatac ccgtactttg aatgttaggtt  
2940

ttttgttgt tgttatctat aaaaattttag gggaaatggtt atgaaaaaaaaa atattttgct  
3000

tggaccata tttcttaagc ataaaaaaaaat gctcagttt gcttgcattc cttgagaatg  
3060

atttatctg aagatcaaaa caaacaatcc agatgtataa gtactaggca gaagccaatt  
3120

taaaatttc cttgaataat ccatgaaagg aataattcaa atacagataa acagagttgg  
3180

agtatattta tagtgataat tttgtatttt caaaaaaaaaaa aaagttaaac tcttctttc  
3240

ttttattat aatgaccagc ttttgttatt tcattgttac caagttctat ttttagataa  
3300

atgttctc cttctaaaaa aaaaaaaaaaa aaaaaaaaaa  
3338

## eolf-seql-S000001.txt

210> 25  
211> 7941  
212> DNA  
213> Homo sapiens

400> 25  
acacatacgtcacgcacgat ctcacttcga tctatacact ggaggattaa aacaaacaaa  
60

aaaaaaaaac atttccttcg ctccccctcc ctctccactc tgagaagcag aggagccgca  
120

ggcgagggg ccgcagaccc tctggaaatg cgaatcctaa agcgtttctt cgcttgcatt  
180

agctcctct gtgttgccg cctggattgg gctaattggat actacagaca acagagaaaa  
240

tttgtgaag agattggctg gtcctataca ggagcaactga atcaaaaaaa ttggggaaag  
300

aatatccaa catgtaatag cccaaaacaa ttccttatca atattgtatga agatcttaca  
360

aagtaaatg tgaatcttaa gaaacttaaa tttcagggtt gggataaaac atcattggaa  
420

acacattca ttcataaacac tggaaaaca gtggaaatta atctcaactaa tgactaccgt  
480

tcagcgtag gagtttcaga aatgggttt aaagcaagca agataacttt tcactggga  
540

aatgcaata tgtcatctga tggatcagag catagtttag aaggacaaaa attccactt  
600

agatgcaaa tctactgctt tgatgcggac cgatttcaa gtttgagga agcagtcaaa  
660

jaaaaggga agttaagagc tttatccatt ttgtttgagg ttgggacaga agaaaatttg  
720

atccaag cgattattga tggagtcgaa agtgttagtc gttttggaa gcaggctgct  
780

agatccat tcatactgtt gaaccttcgt ccaaactcaa ctgacaagta ttacattac  
840

atggctcat tgacatctcc tccctgcaca gacacagttg actggattgt tttaaagat  
900

agtttagca tctctgaaag ccagttggct gtttttgtg aagttcttac aatgcaacaa  
960

## eolf-seq1-S000001.txt

ctggttatg tcatgctgat ggactactta caaaacaatt ttcgagagca acagtacaag  
1020

tctctagac aggtgtttc ctcatacact ggaaaggaag agattcatga agcagttgt  
1080

gttcagaac cagaaaatgt tcaggctgac ccagagaatt ataccagcct tcttgttaca  
1140

ggaaagac ctcgagtcgt ttatgatacc atgattgaga agtttgcaat tttgtaccag  
1200

agttggatg gagaggacca aaccaagcat gaattttga cagatggcta tcaagacttg  
1260

gtgctattc tcaataattt gctacccaat atgagttatg ttcttcagat agtagccata  
1320

gcactaatg gcttatatgg aaaatacagc gaccaactga ttgtcgacat gcctactgat  
1380

atcctgaac ttgatcttt ccctgaatta attggaactg aagaataat caaggaggag  
1440

aagaggaa aagacattga agaaggcgct attgtgaatc ctggtagaga cagtgtaca  
1500

accaaataca ggaaaaagga accccagatt tctaccacaa cacactacaa tcgcataagg  
1560

cgaataaca atgaagccaa gactaaccga tccccacaa gaggaagtga attctctgga  
1620

agggtgatg ttcccaatac atcttaat tccacttccc aaccagtcac taaattagcc  
1680

cagaaaaag atattccctt gacttctcag actgtgactg aactgccacc tcacactgtg  
1740

aaggtactt cagcctctt aaatgatggc tctaaaactg ttcttagatc tccacatatg  
1800

acttgcgg ggactgcaga atccttaat acagttcta taacagaata tgaggaggag  
1860

gtttattga ccagttcaa gcttgatact ggagctgaag attcttcagg ctccagtc  
1920

aaacttctg ctatcccatt catctctgag aacatatccc aagggtatat atttcctcc  
1980

aaaacccag agacaataac atatgatgtc cttataccag aatctgctag aaatgcttcc  
2040

eolf-seql-S000001.txt

aagattcaa cttcatcagg ttcagaagaa tcactaaagg atccttctat ggagggaaat  
2100

tgtggtttc ctagctctac agacataaca gcacagcccg atgttggatc aggcagagag  
2160

gctttctcc agactaatta cactgagata cgtgttgatg aatctgagaa gacaaccaag  
2220

cctttctg caggcccagt gatgtcacag ggtccctcag ttacagatct ggaaatgcca  
2280

attattcta ccttgccta cttccaaact gaggtAACAC ctcatgctt taccatcc  
2340

ccagacaac aggatttggt ctccacggtc aacgtggtat actcgagac aacccaaccc  
2400

tatacaatg gtgagacacc tcttaaacct tcctacagta gtgaagtctt tcctctagtc  
2460

cccctttgt tgcttgacaa tcagatcctc aacactaccc ctgctgcttc aagttagttagt  
2520

cggccttgc atgctacgcc tgtatttccc agtgtcgatg tgtcatttga atccatcctg  
2580

cttcctatg atggtgaccc tttgcttcca tttcctctg cttccttcag tagtgaattt  
2640

ttcgccatc tgcatacagt ttctcaaatac cttccacaag ttacttcagc taccgagagt  
2700

ataagggtgc ccttgcatgc ttctctgcca gtggctgggg gtgatttgc attagagccc  
2760

gccttgctc agtattctga tgtgctgtcc actactcatg ctgcttcaga gacgctggaa  
2820

ttggtagtg aatctggtgt tctttataaa acgcttatgt tttctcaagt tgaaccaccc  
2880

gcagtgtatg ccatgtatgca tgcacgttct tcagggcctg aaccttctta tgccttgtct  
2940

ataatgagg gctcccaaca catcttact gttcttaca gttctgcaat acctgtgcat  
3000

ttctgtgg gtgtaactta tcagggttcc ttatcttagcg gcccttagcca tataccaata  
3060

ctaagtctt cgtaataac cccaaactgca tcattactgc agcctactca tgcctctct  
3120

gtgatgggg aatggtctgg agcctttct gatagtgaat ttctttacc tgacacagat

eolf-seql-S000001.txt  
3180  
ggctgacag cccttaacat ttcttcacct gtttctgttag ctgaatttac atataacaaca  
3240  
ctgtgttg gtgatgataa taaggcgctt tctaaaagtg aaataaatata tggaaatgag  
3300  
ctgaactgc aaattccttc tttcaatgag atggtttacc cttctgaaag cacagtcatg  
3360  
ccaacatgt atgataatgt aaataagttg aatgcgtctt tacaagaaac ctctgtttcc  
3420  
tttctagca ccaagggcat gttccaggg tcccttgctc ataccaccac taaggaaaa  
3480  
atcatgaga ttagtcaagt tccagaaaat aactttcag ttcaacctac acataactgtc  
3540  
ctcaagcat ctggtgacac ttcgcttaaa cctgtgctta gtgcaaactc agagccagca  
3600  
cctctgacc ctgcttctag tgaaatgtta tctccttcaa ctcagctctt attttatgag  
3660  
cctcagctt cttttagtac tgaagtattt ctacaacctt ccttcaggg ttctgatgtt  
3720  
acacccgttgc taaaaactgt tcttccagct gtgccagtg atccaatatt gggtgaaacc  
3780  
ccaaagttg ataaaattag ttctacaatg ttgcacatctca ttgttatcaaa ttctgcttca  
3840  
gtgaaaaca tgctgcactc tacatctgta ccagttttg atgtgtcgcc tacttctcat  
3900  
tgcaactctg cttcacttca aggtttgacc atttcctatg caagtgagaa atatgaacca  
3960  
ttttgttaa aaagtgaaag ttcccaccaa gtggcacctt ctttgtacag taatgatgag  
4020  
tgttccaaa cggccaattt ggagattaac caggccccatc ccccaaaagg aaggcatgt  
4080  
ttgctacac ctgttttac aattgatgaa ccattaaata cactaataaa taagcttata  
4140  
attccgatg aaattttaac ctccaccaaa agttctgtta ctggtaaggt atttgctgg  
4200  
ttccaacag ttgcttctga tacatttgta tctactgatc attctgttcc tataggaaat  
4260

## eolf-seql-S000001.txt

ggcatgttg ccattacagc tgtttctccc cacagagatg gttctgtAAC ctcaacaaAG  
4320

tgcttttc cttaaggc aacttctgag ctgagtata gtgcAAATC tgatGCCGt  
4380

tagtgggtg gtggtaaga tggtagact gatgatgatg gtgatgatga tgatgacaga  
4440

atagtatg gcttatccat tcataagtgt atgtcatgct catcctataAG agaatcacAG  
4500

aaaaggtaa tgaatgattc agacacccac gaaaacagtc ttatggatca gaataatcca  
4560

tctcatact cactatctga gaattctgaa gaagataata gagtcacaAG tgtatcctca  
4620

acagtcaaa ctggtatgga cagaagtccT ggtAAATCAC catcagcaaa tgggctatcc  
4680

aaaagcaca atgatggaaa agaggAAAat gacattcaga ctggtagtgc tctgcttc  
4740

tcagccctg aatctaaAGC atgggcagtt ctgacaagtg atgaagaaAG tggatcaggG  
4800

aaggtacct cagatagcct taatgagaat gagacttcca cagattcag tttgcagac  
4860

ctaattaaaa aagatgctga tgggatcctg gcagcaggTG actcagaaaat aactcctggA  
4920

tccccacagt ccccaacatc atctgttact agcgagaact cagaagtgtt ccacgtttca  
4980

aggcagagg ccagtaataAG tagccatgag tctcgTTTG gtctagctga ggggttggaa  
5040

ccgagaaga aggcagttat accccttGTG atcgtgtcag ccctgacttt tatctgtcta  
5100

tggtttttG tgggtattct catctactgg aggAAATGCT tccagactgc acactttac  
5160

tagaggaca gtacatcccc tagagttata tccacacctc caacacctat ctttccaatt  
5220

agatgtg tcggagcaat tccaaATAAG cacttccAA agcatgttgc agatTTACAT  
5280

aaagttagtG ggTTTACTGA agaATTGAG acactgaaAG agTTTACCA ggaagtgcAG  
5340

eolf-seql-S000001.txt

!gctgtactg ttgacttagg tattacagca gacagctcca accaccaga caacaagcac  
5400

!agaatcgat acataaatat cgttgcctat gatcatagca gggtaagct agcacagctt  
5460

!ctgaaaagg atggcaaact gactgattat atcaatgccca attatgttga tggctacaac  
5520

!gacaaaaag cttatattgc tgcccaaggc ccactgaaat ccacagctga agatttctgg  
5580

.aatgatata gggAACATAA tgtggaagtt attgtcatga taacAAACCT cgtggagaaa  
5640

:aaggagaa aatgtgatca gtactggcct gccgatggga gtgaggagta cgggaacttt  
5700

:tgtcactc agaagagtgt gcaagtgcTT gcctattata ctgtgaggaa ttttactcta  
5760

.gaaacacaa aaataaaaaa gggctcccAG aaAGGAAGAC ccAGTGGACG tGTGGTCACA  
5820

.agtatcact acacgcagtG gcctgacatg ggagtaccAG agtactccCT gccagtgcTG  
5880

ccttgtga gaaaggcAGC ctatGCCAG cGCCATGcAG tggggcctgt tgcgtccAC  
5940

gcagtgctg gagttggaag aacaggcaca tatattgtgc tagacagtat gttcagcAG  
6000

ttcaacacg aaggaactgt caacatattt ggcttcttaa aacacatccg ttcacAAAGA  
6060

attatttgg tacAAACTGA ggagcaatat gtcttcattc atgatacact gttgaggCC  
6120

tacttagta aagAAACTGA ggtgctggac agtcatattc atgcctatgt taatgcactc  
6180

tcattcctg gaccAGCAGG caAAACAAAG ctagAGAAAC aattccAGCT CCTGAGCCAG  
6240

caaataAC agcAGAGTGA ctattctgca GCCCTAAAGC aatgcaACAG ggAAAAGAAAT  
6300

gaacttctt ctatcatccc tgtggAAAGA tcaagggttg gcatttcattc CCTGAGTgGA  
6360

aaggcacAG actacatCAA tgcctcctat atcatggcT attaccAGAG caatgaATTc  
6420

tcattaccc agcaccctct cttcatacc atcaaggatt tctggaggat gatatggac

## eolf-seql-S000001.txt

6480

:ataatgccc aactgggttatgattcct gatggccaaa acatggcaga agatgaattt  
6540

:tttactggc caaataaaga tgagcctata aattgtgaga gctttaaggt cactcttatg  
6600

:ctgaagaac acaaatgtct atctaattgag gaaaaactta taattcagga ctttatctta  
6660

:aagctacac aggatgatta tgtacttgaa gtgaggcact ttcagtgtcc taaatggcca  
6720

:atccagata gccccattag taaaactttt gaacctataa gtgttataaa agaagaagct  
6780

:ccaataggg atgggcctat gattgttcat gatgagcatg gaggagtgac ggcaggaact  
6840

:tctgtgctc tgacaaccct tatgcaccaa ctagaaaaag aaaattccgt ggatgtttac  
6900

:aggttagcca agatgatcaa tctgatgagg ccaggagtct ttgctgacat tgagcagtat  
6960

:agtttctct acaaagtgtat cctcagcctt gtgagcacaa ggcaggaaga gaatccatcc  
7020

:cctctctgg acagtaatgg tgcagcattg cctgatggaa atatagctga gagcttagag  
7080

:cttagttt aacacagaaa ggggtggggg gactcacatc tgagcattgt ttcctcttc  
7140

:taaaatttag gcaggaaaat cagtctagtt ctgttatctg ttgatttccc atcacctgac  
7200

:gtaactttc atgacataagg attctgccgc caaatttata tcattaacaa tgtgtgcctt  
7260

:ttgcaagac ttgtaattta cttattatgt ttgaactaaa atgattgaat ttacagtat  
7320

:tctaagaat ggaattgtgg tattttttc tgtattgatt ttaacagaaa atttcaattt  
7380

:tagaggta ggaattccaa actacagaaa atgtttgttt ttagtgtcaa atttttagct  
7440

:tatttttagt caattatcag gtttgctaga aatataactt ttaatacagt agcctgtaaa  
7500

:aaaacactc ttccatatga tattcaacat tttacaactg cagtattcac ctaaagtaga  
7560

## eolf-seql-S000001.txt

.ataaatctgt tacttattgt aaataactgcc ctagtgtctc catggaccaa atttatattt  
7620  
.taattttagt attttatat ttactactg agtcaagttt tctagttctg tgtaatttt  
7680  
agtttaatg acgttagttca tttagctggtc ttactctacc agttttctga cattgtatgg  
7740  
gttacctaa gtcattaact ttgtttcagc atgtaatttt aacttttgta gaaaatagaa  
7800  
tacccat tttgaaagaa gtttttatga gaataacacc ttaccaaaca ttgttcaaatt  
7860  
gtttttatc caaggaattt caaaaataaa tataaatatt gccattaaaa aaaaaaaaaaa  
7920  
aaaaaaaaa aaaaaaaaaa a  
7941  
  
210> 26  
211> 1530  
212> DNA  
213> Homo sapiens  
  
400> 26  
cgcagaact gccacgtggg gatgagattt gctgggctgg tagcggcggc tgctgcggga  
60  
  
gtccccccc acgtgaagcc agcctaactg agctctggac tttggggaca gctgtcagtg  
120  
  
cctaggccg caggacacca tgaagcaact gccagtcttg gaacctggag acaagccccag  
180  
  
aaagcaaca tggtacacct tgactgtccc tggagacagc ccctgtgctc gagttggcca  
240  
  
agctgttca tatttacccc cagttggtaa tgccaaagaga gggaaaggcttc tcattgttgg  
300  
  
ggagcaaat ccaaacagaa gcttctcaga cgtgcacacc atggatctgg gaaaacacca  
360  
  
tgggactta gatacctgca agggcctttt gccccggat gaacatgcta gcttcattcc  
420  
  
tcctgcaca cctgaccgta tctgggtatt tggaggtgcc aaccaatcag gaaatcgaaa  
480  
  
tgtctacaa gtcctgaatc ctgaaaccag gacgtggacc acgccagaag tgaccagccc  
540

## eolf-seql-S000001.txt

:ccaccatcc ccaagaacat tccacacatc atcggcagcc attggaaacc agctatatgt  
600

:tttgggggc ggagagagag gtgcccgagcc cgtgcaggac acgaagctgc atgtgtttga  
660

:gcaaacact ctgacacctgt cacagccaga gacacttgga aatcctccat ctccccggca  
720

:ggtcatgtg atggtggcag cagggacaaa gctcttcattc cacggaggct tggcgaaaa  
780

:agattctat gatgacacctcc actgcattga tataagtgc atgaaatggc agaagctaaa  
840

:cccaactggg gctgctccag caggctgtgc tgcccactca gctgtggcca tggaaaaaca  
900

:gtgtacatc ttgggtggaa tgactcctgc aggagcactg gacacaatgt accagtatca  
960

:acagaagag cagcatttggaa ctttgcttaa atttgatact cttctacccc ctggacgatt  
1020

:gaccattcc atgtgttatca ttccatggcc agtgacgtgt gcttctgaga aagaagattc  
1080

:aactctctc actctgaacc atgaagctga gaaagaggat tcagctgaca aagtaatgag  
1140

:cacagtggt gactcacatg agggaaagcca gactgctaca ctgctctgtt tgggtttgg  
1200

:gggatgaat acagaagggg aaatctatga cgatttgtt gtgactgttag tggactaata  
1260

:aacccacat ttttattacc tgtcagttac tttcagaata gttaagtaaa acattagctg  
1320

:tttataacct ccaaaatatc ttctgcatta tatatctgtt tttctcctac tttggtaggt  
1380

:aagaaacta atgcaaataa ttcttatgtg cactaaacct tgctatattg cctctcaaaa  
1440

:aa  
1500

:aa  
1530

210> 27  
211> 2314

eolf-seql-S000001.txt

:212> DNA  
:213> Homo sapiens

:400> 27  
:gcgcgcaca gagcgagctc ttgcagcctc cccgcccctc ccgcaacgct cgaccccagg  
60  
  
.ttccccccgg ctgcgcgtgcc cgccatggcc gacaaggaag cagccttcga cgacgcagtg  
120  
  
.aagaacgag tgatcaacga ggaatacaaa atatggaaaa agaacacccc ttttctttat  
180  
  
.atttgtga tgacccatgc tctggagtgg cccagcctaa ctgcccagtg gcttccagat  
240  
  
taaccagac cagaaggaa agatttcagc attcatcgac ttgtcctggg gacacacaca  
300  
  
cggatgaac aaaaccatct tgttatagcc agtgtgcagc tccctaataatga tgatgctcag  
360  
  
ttgatgcgt cacactacga cagtgagaaa ggagaatttg gaggtttgg ttcagttgt  
420  
  
aaaaaattg aaatagaaaat caagatcaac catgaaggag aagtaaacag ggcccgttat  
480  
  
tgccccaga acccttgtat catcgcaaca aagactcctt ccagtgtatgt tcttgcgttt  
540  
  
actatacaa aacatccttc taaaccagat ctttctggag agtgcaaccc agacttgcgt  
600  
  
tccgtggac atcagaagga aggctatggg ctttcttggaa acccaaatct cagtggcac  
660  
  
taccttagtg cttcagatga ccataccatc tgcctgtggg acatcagtgc cgttccaaag  
720  
  
agggaaaag tggtagatgc gaagaccatc tttacaggc atacggcagt agtagaaagat  
780  
  
tttcctggc atctactcca tgagtctctg tttgggtcag ttgctgtatga tcagaaactt  
840  
  
tgatttggg atactcggtc aaacaatact tccaaaccaa gccactcagt tgatgctcac  
900  
  
stgctgaag tgaactgcct ttcttcaat ctttatagtg agttcattct tgccacagga  
960  
  
cagctgaca agactgttgc cttgtggat ctgagaaatc tgaaacttaa gttgcattcc  
1020

eolf-seql-S000001.txt

:ttagtcac ataaggatga aatattccag gttcagtgg cacctcacaa tgagactatt  
1080

:agcttcca gtggtaactga tcgcagactg aatgtctggg atttaagtaa aattggagag  
1140

:acaatccc cagaagatgc agaagacggg ccaccagagt tgggtttat tcatggtggt  
1200

:atactgcc a agatatctga ttctcctgg aatcccaatg aaccttggtt gatttgttct  
1260

:atcagaag acaatatcat gcaagtgtgg caaatggcag agaacattta taatgatgaa  
1320

:ccctgaag gaagcgtgga tccagaagga caagggtcct agatatgtct ttacttggt  
1380

:attttaga ctccccttt ttcttctcaa ccctgagagt gatttaacac tggttttag  
1440

:agacttta ttca gctatc cctctatata ataggtacca ccgataatgc tattagccca  
1500

:ccgtgggt tttctaaat attaataagg gggcttgatt caacaaagcc acagacttaa  
1560

:ttgaaatt ttcttcagga atttctagt aacctaggc taaagtagct acagaaagg  
1620

:atattatg tgtgattatt ttcttctta tgctatatcc ccaagtttt cagactcatt  
1680

:agtaaagg ctagagttag taaggaatag agccaaatga ggtaggtagc tgagccatga  
1740

:tataaata ctgaaagatg tcactttat tcagggaaaata gggggagttc aagtcgtata  
1800

:ttcctact cgaaaatctt gacacctgac ttccaggat gcacatttc atacgttagac  
1860

:tttccttc ttggtttctt cagtttagtc aaaacaacac gttcctttt cccatataat  
1920

:atataattt ttgctcgat ttttattttc tgagctgttt tcatgttgc tatttcctgt  
1980

:gtgaaatg gtgtttttt ttgtttttt ggtttttt tttttttt aacttgggac  
2040

:ccaagttg taaagatgt a ttttttacc tgacagttt accacaggt aactgtcaag  
2100

:gagaagag tgaatcaata acttgttattt gttttaaaaa ttaaattaat cttgataag

eolf-seql-S000001.txt

2160

gttgcttt ttttttagg agttagtcct tgaccactag tttgatgcc a tctccatttt  
2220

ggtgacctg tttcaccaggc aggccgttta ctctccatga ctaactgtgt aagtgcctaa  
2280

atggaaataa attgctttc tacataaaaa aaaa  
2314

210> 28  
211> 2848  
212> DNA  
213> Homo sapiens

400> 28  
cttctcccc ggcggtagt gctgagagtg cgaggtgtgt gctccggc cggAACACAC  
60

tttattatt aaaaaatcca aaaaaaatct aaaaaaatct tttaaaaaac cccaaaaaaaa  
120

ttacaaaaaa atccgcgtct ccccgccgg agactttat ttttttctt cctctttat  
180

aaataaccc ggtgaagcag ccgagaccga cccgccccgc cgcggccccc cagcagctcc  
240

agaaggaac caagagaccg aggccttccc gctgcccgg a cccgacacccg ccacccctcgc  
300

ccccggccgg cagccggcag ccagccggcag tggatcgacc ccgttctgcg gccgttgagt  
360

gttttcaat tccgggttagt ttttgtccct ctgcgttgc tcccccgtcc cctccccccg  
420

ctccggccgg ccagccccgg cactcgctct cctcctctca cggaaaggtc gcggcctgtg  
480

cctgcgggc agccgtgccg agatgaaccc cagtcccccc agtacccca tggcctcgct  
540

tacgtgggg gacctccacc ccgacgtgac cgaggcgatg ctctacgaga agttcagccc  
600

gccccggcc atcctctcca tccgggtctg cagggacatg atcacccgcc gctccttggg  
660

acgcgtat gtgaacttcc agcagccggc ggacgcggag cgtgcttgg acaccatgaa  
720

ttgatgtt ataaaggca agccagtacg catcatgtgg tctcagcgtg atccatcact

## eolf-seql-S000001.txt

780

:cgcaaaagt ggagtaggca acatattcat taaaaatctg gacaaatcca ttgataataa  
840

:gcactgtat gatacatttt ctgctttgg taacatcctt tcattgttaagg tggtttgtga  
900

:gaaaatggt tccaaaggct acggatttg acactttgag acgcaggaag cagctgaaag  
960

:gctattgaa aaaatgaatg gaatgctcct aaatgatcgc aaagtatttg ttggacgatt  
1020

:aagtctcgt aaagaacgag aagctgaact tggagctagg gcaaaagaat tcaccaatgt  
1080

:tacatcaag aattttggag aagacatgga tcatgagcgc cttaaggatc tctttggcc  
1140

:gccttaagt gtgaaagtaa tgactgatga aagtggaaaa tccaaaggat ttggatttgt  
1200

:agcttgaa aggcatgaag atgcacagaa agctgtggat gagatgaacg gaaaggagct  
1260

:aatggaaaa caaatttatg ttggtcgagc tcagaaaaag gtggAACGGC agacggaact  
1320

:aagcgcaaa tttgaacaga tgaaacaaga taggatcacc agataccagg gtgttaatct  
1380

:tatgtgaaa aatcttgatg atggatttgatg tcatgttacgt ctccggaaag agttttctcc  
1440

:tttggtaca atcactatgt caaaaggat gatggagggt ggtcgacgca aagggtttgg  
1500

:tttgcgtatgt ttctcctccc cagaagaagc cactaaagca gttacagaaa tgaacggtag  
1560

:attgtggcc acaaagccat tgtatgtac ttttagctcag cgcaaaagaag agcgccagcc  
1620

:cacctcact aaccagtata tgcagagaat ggcaagtgtt ctagctgttc ccaaccctgt  
1680

:atcaacccc taccagccag caccccttc aggttacttc atggcagcta tcccacagac  
1740

:cagaaccgt gctgcataact atcctccttag ccaagttgtt caactaagac caagtcctcg  
1800

:tggactgct cagggtgccg gacctcatcc attccaaaat atgcccggtg ctatccgccc  
1860

## eolf-seql-S000001.txt

:gctgctcct agaccaccat ttagtactat gagaccagct tcacagg ttccacgagt  
1920  
:atgtcaaca cagcgtgtg ctaacacatc aacacagaca atgggtccac gtcctgcagc  
1980  
:gcagccgct gcagctactc ctgctgtccg caccgttcca cagtataaat atgctgcagg  
2040  
:gttcgcaat cctcagcaac atcttaatgc acagccacaa gttacaatgc aacagcctgc  
2100  
:gttcatgta caaggtcagg aaccttgac tgcttccatg ttggcatctg cccctcctca  
2160  
:gagcaaaag caaatgttgg gtgaacggct gttcctctt attcaagcca tgcaccctac  
2220  
.cttgcttgt aaaatcactg gcatgttgtt ggagattgtat aattcagaac ttcttcataat  
2280  
.ctcgagtct ccagagtcac tccgttctaa ggttgatgaa gctgtagctg tactacaagc  
2340  
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2400  
:taaaattga tcagggacca tgaaaagaaa cttgtgcttc accgaagaaa aatatctaaa  
2460  
atcgaaaaaa cttaaatatt atgaaaaaaaaaacattgcaa aatataaaat aaataaaaaaa  
2520  
ggaaaggaa actttgaacc ttatgtaccg agcaaattgcc aggtctagca aacataatgc  
2580  
agtcctaga ttacttattt attaaaaac aaaaaaacac aaaaaatagt aaaatataaa  
2640  
acaaattaa tgtttatag accctggaa aaagaatttt cagcaaagta caaaaattta  
2700  
agcattcct ttcttaatt ttgtattct ttactgtgga atagctcaga atgtcagttc  
2760  
gttttaagt aacagaattt gataactgagc aaggaaacgt aatttggatt ataaaattct  
2820  
gctttaata aaaattcctt aaacagtg  
2848

210> 29  
211> 2424

eolf-seql-S000001.txt

:212> DNA  
:213> Homo sapiens

:400> 29  
.cttggaaactc tagcacgccc agtgaacttg aatctttggc tatttaagga ggactgggtt  
60

.gttgtgaag ttgcggtgat ccagcgcaga gccccgtcct gattgatcgc atcgcggggc  
120

.cagatgact gtaaaaatgaa tagatgaaat tcttgcttct cgaagatttt ctggggcatc  
180

.cccgaaaaag tgcgttttaa ggcgaagtca tcatgttattc tcccatctgt ctcactcagg  
240

.tgaatttca cccattcatg gaagcacttc ttccacatgt ccgtgcaatt gcctataactt  
300

.gttcaacct gcaggctcga aaacgcaagt actttaaaaa gcatgagaag cgaatgtcaa  
360

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420

gtgggcatc caggctcctt gccaaactgc gcaaagatat tcgcccaggag tatcgagagg  
480

ctttgtgct caccgtgact ggcaagaagc acccgtgctg tgtcttatcc aatcccgacc  
540

gaagggtaa gattaggaga atcgactgcc tgcgacaggc agacaaagtc tggcgtctgg  
600

tcttagtcat ggtgatcctg ttcaaaggca tccccttgg aagtaccgt ggagagcggc  
660

catgaaatc cccacattgc acaaaccag cactttgtgt ccagccacat catatcacag  
720

atcagttaa ggagcttgat ttgttttgg catactacgt gcaggagcaa gattctggac  
780

atcaggaag tccaagccac aatgatcctg ccaagaatcc tccaggttac cttgaggata  
840

ttttgtaaa atctggagtc ttcaatgtat cagaacttgt aagagtatcc agaacgcccc  
900

aacccaggg aactggagtc aactcccaa ttggagaaat cccaagccaa ccatactatc  
960

tgacatgaa ctcgggggtc aatttcaga ggtctctgtc ttctccacca agcagcaaaa  
1020

eolf-seql-S000001.txt

acccaaaac tataatccata gayaaaaata tggAACCAAG tcctACAGGA gactttacc  
1080

ctctccaag ttcaccagct gctggaaagtc gaacatggca cgaaagagat caagatatgt  
1140

ttctccgac tactatgaag aaggctgaaa agccattgtt cagctctgca tctccacagg  
1200

ttcttcccc aagactgagc actttccccc agcaccacca tcccggaaa cctggagttg  
1260

acacagtgt catctcaact cgaactccac ctccacccctc accgttgcca tttccaacac  
1320

agctatcct tcctccagcc ccatcgagct actttctca tccaaacaatc agatatcctc  
1380

ccacctgaa tcctcaggat actctgaaga actatgtacc ttcttatgac ccattccagtc  
1440

acaaaccag ccagtcctgg tacctgggct agcttgggtc ctttccaagt gtcaaataagg  
1500

caccatct taccggccaa tgtccaaaat tacggttga acataattgg agaaccttc  
1560

ttcaagcag aaacaagcaa ctgagggaaa aagaaacaca acaatagttt aagaaatttt  
1620

ttttaaat aaaaaaaaaagg aaaagaggaa gactggacaa aacaacacaa aggcagaaag  
1680

aaagaaact gaagaaagaa gataatagac cagcaattgc agcacttaca atcactaatt  
1740

cttaaggt taaactgtaa tgacataaaa agggtcgatg atatttcact gatggtagat  
1800

gcagccccct gcaacgtagc ctttgttaca tgaagtccgc tggaaatag atgttctgtc  
1860

ctatgacaa tatattttaa ctgactttct agatgcctta atatttgcac gataagctag  
1920

cttattgggt ttagtattct tgggtttac gcatggaatc actattcctg gttatctcac  
1980

iacgaaggc taggaggcgg cgtcagagat gctgggtgac agagccatga gccagccatt  
2040

:ataagcac tctgatttct aaaagttaaa aaaaatatat gaaatctctg tagccttttag  
2100

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## eolf-seql-S000001.txt

2160

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2220

iacagtttgc aacacaaagg ctctatggaa gaaatgcctc tatgttaggtg aagtgttctc  
2280

tgcatgca acagtaaaaa ttaatataat attttccccca caaaagaaac acttaacaga  
2340

jgcaagtgc aatttattaa atttatattc taaaaggggg aattcatgga ttattaaggt  
2400

:ttcaggcc cttggggact ctta  
2424

:10> 30

:11> 838

:12> DNA

:13> Homo sapiens

:100> 30

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60

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120

aaagaagt ttgcccääää gatgcttcga aaggcaagga ggaagcttat ctatgääää  
180

:aaagcact atcacaagga atataggcag atgtacagaa ctgaaattcg aatggcgagg  
240

.ggcaagaa aagctggcaa cttctatgta cctgcagaac ccaaattggc gtttgtcatc  
300

:aatcagag gtatcaatgg agtgagccca aagggtcgaa aggtgttgc gcttcttcgc  
360

tcgtcaaa tcttcaatgg aacctttgtg aagctcaaca aggcttcgat taacatgctg  
420

:gattgttag agccatatat tgcatggggg taccccaatc tgaagtcaatc aaatgaacta  
480

ctacaagc gtggttatgg caaaatcaat aagaagcgaa ttgctttgac agataacgct  
540

gattgctc gatctcttgg taaatacggc atcatctgca tggaggattt gattcatgag  
600

ctataactg ttggaaaacg cttcaaagag gcaaataact tcctgtggcc cttcaaattg

eolf-seql-S000001.txt

660

:ttctccac gaggtggaat gaagaaaaag accaccatt ttgtagaagg tggagatgct  
720

:caacaggg aggaccagat caacaggctt attagaagaa tgaactaagg tgtctaccat  
780

:ttttttt ctaagctggt tggtaataa acagtacctg ctctcaaatt gaaaaaaaa  
838

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?12> DNA  
?13> Homo sapiens

!00> 31

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60

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120

:tcacagtg gaagaggcgc ccgcgtcgc ctgcccggag gagccgtcgc gcgcggcgtt  
180

:tgttcggc tggttcctgc cagctcgagg acaaaacacg cgtgcgcgcg gcggcgagc  
240

:gctcgccg cctcagtgc cagcgccggg cgcagtccgc cttttccgg agcagactgg  
300

:gcggtgct agtcggtagc agcggccgccc gcagcggctc cgcactggcg aaccgagggc  
360

:aaaaaggc ggggttgacg gcttttgggt aggagtgggc tggaccggac gccagagaca  
420

:ggctccca aggcaagagg gactgtggcc ctgcgtcggc tctgctcgga actgctgacc  
480

:aggaattt acgccccttc gttttctct tctgattctt ctcttctccc aagcccgctg  
540

:cctcacgc gtggcctctc tccttgccgg gagggccgcg atggaggtcc cgcccgaggct  
600

:cccatgtg ccgccgcct tgttccctc cgctcccgct acttagcct cccgcagcct  
660

:cccatgg cggccgcggc cgccgcggca gctagcccg ctccctccct cgctcgctcc  
720

:gctccgcc cggcaggggg cgccgcgggc ccagcgccac gtcaccggcc agcagccctc

## eolf-seql-S000001.txt

780

:gattggcg ggcggggcgg ctataaaggg agggcgcagg cggcgcccg atctcttccg  
840

:gccatttt aaatccagct ccataacaacg ctccgcccgc gctgctgccg cgaccggac  
900

:cgcgccag cacccccctg ccgacagctc cgtcactatg gaggatatga acgagtacag  
960

:atatacag gaattcgca gggatccaa gatcaacgcg agcaagaatc agcaggatga  
1020

:tgtaaaatg tttattggag gcttgagctg ggataacaagc aaaaaagatc tgacagagta  
1080

:tgtctcga tttgggaag ttgttagactg cacaattaaa acagatccag tcactggag  
1140

:caagagga tttggatttg tgctttcaa agatgctgct agtgttgata aggtttgga  
1200

:tgtaaagaa cacaactgg atggcaaatt gatagatccc aaaaggcca aagctttaaa  
1260

:ggaaagaa cctcccaaaa aggttttgt gggtggattg agccggata cttctgaaga  
1320

:aaattaaa gaatattttg gagccttgg agagattgaa aatattgaac ttcccatgga  
1380

:caaaaaca aatgaaagaa gaggatttg ttttatcaca tatactgatg aagagccagt  
1440

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1500

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1560

:cagctggc ggacgaggtg gtacgagggg tcgtggccga ggtcagggcc aaaactggaa  
1620

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1680

:atcaaaac tataatggct atggcgata tgattatact gggataact atggaaacta  
1740

:gatatgga cagggatatg cagactacag tggccaacag agcacttatg gcaaggcatc  
1800

:gaggggggt ggcaatcacc aaaacaatta ccagccatac taaaggagaa cattggagaa  
1860

## eolf-seql-S000001.txt

:cagcgaaa acttcattgc aggccgtgtg tcaccctgac cacgtctatc tctgggggtc  
1920  
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1980  
:aagtaacc catcttgcag gacgacattt aagattggtc ttctgttgat ctaagatgtat  
2040  
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2100  
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2220  
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2280  
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2460  
cccttctg gttatctgaa gactgtcctg aaaggaagac ataagtgttgc tgatttagtag  
2520  
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2580  
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2640  
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2700  
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2760  
aagttgtt ttagctgtt aatgtctgtt agtttagaga aaagtcttga tagtttttttt  
2820  
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2880  
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2940

eolf-seql-S000001.txt  
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3060  
  
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3120  
  
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3180  
  
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3240  
  
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3300  
  
ccaaagtacc aatgttggct gttagaaggg attctgttca ttcaacatgc aacttttaggg  
3360  
  
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3420  
  
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3480  
  
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3514  
  
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?11> 1186  
?12> DNA  
?13> Homo sapiens  
  
!00> 32  
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120  
  
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180  
  
:cccttgga gctagacatc ctgtacttag tcacggggat ggtgaaagag ggagaagagg  
240  
  
:gggtgaag ggaagggctc tttgctagta tctccatatac tagacgtatgg ttttagatga  
300  
  
:accacagg tctacaagag cgtttttagt aaagtgcctg tggcattgt ggacaaagtt  
360

eolf-seql-S000001.txt  
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420  
:tgtgaatta gcctatttgt aaataccctt gttataattt ataggataca tcttggacat  
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600  
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660  
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720  
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780  
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900  
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:11> 606  
:12> DNA  
:13> Homo sapiens  
  
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eolf-seql-S000001.txt  
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240  
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300  
gccttgaa cgagtataaa taatggctgt tcagcagaga aacccatgtc ctctctccat  
360  
ggcctgtt ttactatgtat gtaaaaatta ggtcatgtac atttcatat tagactttt  
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480  
gctctcat tccagtttt tctaacaatga atttcctgg ttgacattga tttcaaagg  
540  
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600  
aaaaa  
606

?10> 34  
?11> 1579  
?12> DNA  
?13> Homo sapiens  
!00> 34  
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120  
:cttccacg tgggtgaagg actgtgccag ctgagaggtg gtagagcagg aagctgcctg  
180  
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300  
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360  
:tgctctga cagttcagtt tgttcaggga attttgcgtt aaaaatatga cccaacgata  
420

eolf-seql-S000001.txt  
aagattcct acagaaagca agttgaagtc gattgccaac agtgtatgct cggaaatcctg  
480  
  
atactgcag ggacagagca atttacagca atgaggatt tgtatatgaa gaacggccaa  
540  
  
gttttgcac tagtatattc tattacagct cagtccacgt ttaacgactt acaggacctg  
600  
  
gggaacaga ttttacgggt taaggacacg gaagatgttc caatgattt gggtggcaat  
660  
  
aatgtgacc tggaaagatga gcgagtagtt ggcaaagagc agggccagaa tttagcaaga  
720  
  
agtggtgta actgtgcctt tttagaatct tctgcaaagt caaagatcaa tgttaatgag  
780  
  
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840  
  
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900  
  
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1200  
  
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1260  
  
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1320  
  
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## eolf-seql-S000001.txt

1560

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211> 4160  
212> DNA  
213> Homo sapiens400> 35  
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120gaaagtaca gccgcgccgc cccaagtcag cctggacaca taaatcagca cgccgcggaa  
180aaccccgca atctctgcgc ccacaaaata .caccgacgat gcccgcata .cttaaggc  
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660aagtccct gcaccacgac cagaaacaca gtgtgtcagt gcgaagaagg cacttccgg  
720agaagatt ctccctgagat gtgccggaag tgccgcacag ggtgtcccag agggatggtc  
780tgtcggtg attgtacacc ctggagtgcac atcgaatgtg tccacaaaga atcaggtaca  
840

gcacagtg gggaaagcccc agctgtggag gagacggtga cctccagccc agggactcct

## eolf-seql-S000001.txt

900

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960

ttgtggctg tgtttggttt caagtctta ctgtggaaga aagtccccc ttacctgaaa  
1020

gcatctgct caggtggtgg tggggaccct gagcgtgtgg acagaagctc acaacgacct  
1080

gggctgagg acaatgtcct caatgagatc gtgagtatct tgcagccac ccaggtccct  
1140

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1200

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1260

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1320

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1380

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1440

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1500

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1560

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1620

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1680

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1740

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1800

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1860

:gagatttg gtttggatg tcattgttt cacagcactt ttttaccta atgtaaatgc  
1920

:tatttatt tatttggct acattgtaaatccatctac acagtcgttgc tccgacttca  
1980

## eolf-seql-S000001.txt

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2040

cccagctg gagtgcaatg gtcaatctt ggctcactat agcctgacc tctcaggctc  
2100

agcgattct cccacctcag ccatccaaat agctgggacc acaggtgtgc accaccacgc  
2160

ggcttaatt ttttgtat ttgtctagata tagggctct ctatgttgct cagggtggtc  
2220

gaattcct ggactcaagc agtctgccca cctcagactc ccaaagcggt ggaatttagag  
2280

gtgagccc ccatgcttgg ctttaccttt ctactttat aattctgtat gttattattt  
2340

atgaacatg aagaaacttt agtaaatgta cttgtttaca tagttatgtg aatagattag  
2400

aaacataa aaggaggaga catacaatgg gggaaaaga agaagtcccc tgtaagatgt  
2460

ctgtctgg gttccagccc tccctcagat gtacttggc ttcaatgatt ggcaacttct  
2520

aggggcca gtctttgaa ctggacaacc ttacaagtat atgagtatta tttataggtt  
2580

tgtttaca tatgagtcgg gaccaaagag aactggatcc acgtgaagtc ctgtgtgtgg  
2640

ggtccta cttggcagt ctcatttgc cccataggcc ccatctatgg acaggctggg  
2700

agggcag atgggttaga tcacacataa caatagggtc tatgtcatat cccaagtgaa  
2760

tgagccct gttgggctc aggagataga agacaaaatc tgtctccac gtctgccatg  
2820

atcaaggg ggaagagttag atggtgcttg agaatggtgt gaaatggttg ccatctcagg  
2880

tagatggc ccggctcact tctggttatc tgtcacccctg agcccatgag ctgcctttt  
2940

gtacagat tgcctacttg aggacttgg ccgtctgtt agcatctgac tcatctcaga  
3000

tgtcaatt cttaaacact gtggcaacag gacctagaat ggctgacgca ttaaggttt  
3060

eolf-seql-S000001.txt  
:tcttgtgt cctgttctat tattgtttta agacctcagt aaccattca gcctcttcc  
3120  
:jcaaaccct tctccatagt atttcagtca tggaaggagtc atttatgcag gtagtcatc  
3180  
:ggagtttt tggtctttc tgtctcaagg cattgtgtgt tttgttccgg gactggtttg  
3240  
:jtgggacaa agttagaatt gcctgaagat cacacattca gactgttgcg tctgtggagt  
3300  
:taggagtg gggggtgacc tttctggctt ttgcacttcc atcctctccc acttccatct  
3360  
:jcatcccac gcgttgcctt ctgcacttctt ggaaggcaca gggtgctgct gcctcctgg  
3420  
:ttgcctt gctgggcctt ctgtgcagga cgctcagcct cagggctcag aaggtgccag  
3480  
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3540  
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3600  
:tctctcgc ccaggctgga gtgcaacggt acgatctgg ctcagtgcaa cctccgcctc  
3660  
:gggttcaa gcgattctcg tgcctcagcc tccggagtag ctgggattgc aggacccgc  
3720  
:ccacgcct ggctaatttt tgtattttta gtagagacgg ggttcacca tgggttcag  
3780  
:tggtctcg aactcctgac ctcaggtgat ccaccttggc ctccgaaagt gctgggatta  
3840  
.ggcgtgag ccaccagcca ggccaagcta ttctttaaa gtaagcttcc tgacgacatg  
3900  
.ataattgg gggtttgg ttttagttac attaggcttt gctatatccc caggccaaat  
3960  
.catgtgac acaggacagc catagttatag tgtgtcactc gtgggtggc tccttcatg  
4020  
tctgcctt gtcaaaggc cctatttcaa atgtgttata atacaaacaa ggaagcacat  
4080  
tgtacaaa atacttatgt atttatgaat ccatgaccaa attaaatatg aaaccttata  
4140  
aaaaaaaaaaaaaaaaaaaa

## eolf-seql-S000001.txt

4160

210> 36  
211> 666  
212> DNA  
213> Homo sapiens

400> 36  
caggcttgg ctgcgcctc tcgcgcccga cgctctgcgg gttcctccct tcttccgagc  
60

tctcctctg gccgcccgc gggagagagg ccgagatggc agatgagatt gccaaggctc  
120

ggtcgctcg gcctggtggc gacacgatct ttggaaagat catccgcaag gaaataaccag  
180

caaaatcat tttttaggat gaccggtgcc ttgctttcca tgacatttcc cctcaaggcac  
240

aacacattt tctgggtata cccaaagaaac atatatccca gatttctgtg .gcagaagatg  
300

tgatgaaag tcttcttgaa cacttaatga ttgttggcaa gaaatgtgct gctgatctgg  
360

cctgaataaa gggttatcga atgggtgtga atgaagggtc agatggtgga cagtctgtct  
420

tcacgttca tctccatgtt ctggagggtc ggcaaattgca ttggcctcct ggttaaggcac  
480

ttttgggaa taattttctc ttcttttaggc aatgattaag ttaggcaatt tccagtatgt  
540

aagtaaacac acttattttt gcctgtgtat ggagagattc aagaaataat ttaaaaccg  
600

atacataat aaaagacatt gttgcatggc ttgtaaaaaaaaaaaaaaaaaaaaaaa  
660

aaaaa  
666

?10> 37  
?11> 3683  
?12> DNA  
?13> Homo sapiens

!100> 37  
!tggcaggc ggcggctgca gggcaggtcc aggggccaca tggctgaggg ggacgcaggg  
60

eolf-seql-S000001.txt  
gcgaccaga ggcagaatga ggaaattgaa gcaatggcag ccatttatgg cgaggagtgg  
120  
  
gtgtcattg atgactgtgc caaaatatattt tgtatttagaa ttagcgacga tatagatgac  
180  
  
ccaaatgga cacttgctt gcaggtgatg ctgccaatg aatacccagg tacagctcca  
240  
  
ctatctacc agttgaatgc tccttggctt aaaggcaag aacgtgcgga tttatcaaatt  
300  
  
gccttgagg aatatataat tcagaatatc ggtgaaagta ttcttacct gtgggtggag  
360  
  
aaataagag atgttcttat aaaaaatct cagatgacag aaccaggccc agatgtaaag  
420  
  
aaaaactg aagaggaaga ttttgaatgt gaagatgatc tcattttacgc atgtcagccg  
480  
  
aaagttcgg ttaaagcatt ggattttgat atcagtgaaa ctcggacaga agtagaagta  
540  
  
aagaattac ctccgattga tcatggcatt cctattacag accgaagaag tactttcag  
600  
  
cacacttgg ctccagtggc ttgtccaaa caggtgaaaa tggtcttcc caaattgtat  
660  
  
agaataaga aaatagctag tgccacccac aacatctatg cctacagaat atattgtgag  
720  
  
ataaacaga ctttcttaca ggattgtgag gatgatgggg aaacagcagc tggtggcgt  
780  
  
tcttcatc tcatggagat tttgaatgtg aagaatgtca tggtggtagt atcacgctgg  
840  
  
tggaggga ttctgctagg accagatcgc tttaaacata tcaacaactg tgccagaaac  
900  
  
actagtgg aaaagaacta cacaattca cctgaggagt catctaaggc tttggaaag  
960  
  
caaaaaag taagaaaaga caagaagagg aatgaacatt aatacctgaa actataggaa  
1020  
  
gttaattt gcctataatt atatatacat tccatagtca tcaaggaata tattgtgcag  
1080  
  
agagtatc ctgactgct taagtcagcc agttcagcat ggataccaac attagtttt  
1140  
  
tcttggtt atatcatctg caaaaatag agaactttagt atctattcat gtgtgtttca



## eolf-seql-S000001.txt

aagcacaga gaattggaca aacaggctt tttctctttt ctctgatgtt ttaccttaa  
2340

agatccaac atccttaccg ttggtatTTT tagtaaggTTT atagtaaata gctttacacc  
2400

ggatggatt ctgaaatata aattctaaat tatatttggTTT ataactataat tttatgttgg  
2460

tgttatcag gagccatcag agaatgacct ttttggtttt ggaacacttg gttccatgaa  
2520

agtatgctt tgtgtttaa ctgttaaaat aatttaaaaaa ttaatttattt tacataatta  
2580

agaagttaa aaactattaa cattaaataa tttcacaatt tcaacatgtc aaacctatga  
2640

gggagatag gaaacaatga gaaacttact tttgctcctt tatacagaat tattaactat  
2700

ttttactaa ctaaaaaact ctagtattct ttacctaaag tcaattggct ggtaagaggg  
2760

gagatgcaa aattctccag ctctgaactt ggagctactt cacactctac tcttaatgga  
2820

acttgaact aatgatagat agtattttt tcctctattt aaaatttttgc tcttgattag  
2880

agatttttc agttctccat ataataattt tctacaatca gatctatgct gtggcatatt  
2940

:gctttatt taAAAATTtT ttttagaga tgagttcttgc ctctgtcacc taggctggag  
3000

:gcagtggca tgatcatggc tcactgcagg cttgacccccc cagcctgcc aagtagctgg  
3060

:tacagaca ggcatgtgct attacacccgt gctaattttt aaagttttt ttgtaaagat  
3120

:gggtctttc tatgttgccc aggctcgct tgagctccttgc gcctcaatcg atcttcctgc  
3180

:aaggTTTTG gaattacagg tgtgagccac catgcctggc ctgctttgac atattttata  
3240

:gtgttaat tacaaatagt cttcatatgc cagaatataa gagcaagtgt tatctacttt  
3300

:agatggga attgcagaag ctgcataaaa agtatgctt gaggtatata tagtgaacaa  
3360

eolf-seql-S000001.txt  
agccttct gaagagaatt atatcaaact aattacaacc aagaaataat agtatgaagc  
3420  
  
gatgctgtt tggaggacag gaaaatttat cggaaaatt acataatccc tctgattcca  
3480  
  
tatccagag atagccatta ttatataat ttggatgtt catcctata ttatTTTT  
3540  
  
ttatgcattt attttgtata tatggttatt tttcttcca taaaaatggt attaaactgt  
3600  
  
tatactgtt ttgttagccta catatTCAT atagaagtat attgttaaca tttccatgt  
3660  
  
aataaaatat tctatggcTT tct  
3683  
  
210> 38  
211> 3251  
212> DNA  
213> Homo sapiens  
  
400> 38  
agcaactat gaaataatcg tagtatgaga ggcagagatc gggcgagac aatggggatg  
60  
  
gggcgcggg agccccgttc cggcttagca gcacccccc gccccgcaga ataaaaccga  
120  
  
cgc  
180  
  
aggaggagg aggaggaggc cccggaggag gaggcgTTgg aggtcgaggc ggaggcggag  
240  
  
aggaggagg ccgaggcgcc ggaggaggcc gaggcgccgg agcaggagga ggccggccgg  
300  
  
ggcggcatg agacgagcgt ggcggccgcg gctgctcggg gccgcgcgtgg ttgccatttg  
360  
  
cagcggcgt ctgcagctcg cttcaagatg gccgcttggc tcgcattcat tttctgctga  
420  
  
cactttta actttcatttgc tctttccgc ccgcttcgtat cgccctcgccg cggctgctct  
480  
  
ccgggatt ttttatcaag cagaaatgca tcgaacaacg agaatcaaga tcactgagct  
540  
  
atccccac ctgatgtgtg tgcttgcgtgg agggtacttc attgtatgccca caaccataat  
600

eolf-seql-S000001.txt

gaatgtcta cattccttct gtaaaaacgtg tattgttcgt tacctggaga ccagcaagta  
660

tgtcctatt tgtgatgtcc aagttcacaa gaccagacca ctactgaata taaggcaga  
720

aaaactctc caagatattg tatacaaatt agttccaggg cttttcaaaa atgaaatgaa  
780

agaagaagg gattttatg cagctcatcc ttctgctgat gctgccaaatg gctctaattga  
840

gatagagga gaggttgcag atgaagataa gagaattata actgatgatg agataataag  
900

ttatccatt gaattcttg accagaacag attggatcg aaagtaaaca aagacaaaga  
960

aaatctaag gaggaggtga atgataaaag atacttacga tgcccagcag caatgactgt  
1020

atgcactta agaaagttc tcagaagtaa aatggacata cctaatactt tccagattga  
1080

gtcatgtat gaggaggaac ctttaaagga ttattataca ctaatggata ttgcctacat  
1140

tatacctgg agaaggaatg gtccacttcc attgaaatac agagttcgac ctacttgc  
1200

aatgaag atcagtcacc agagagatgg actgacaaat gctggagaac tgaaaagtga  
1260

:ctgggagt gacaaggcca acagcccagc aggaggtatt ccctccaccc ttcttgc  
1320

:ctagcccc agtactccag tgcagtctcc tcattcacag tttcctcaca ttccagtc  
1380

:atgaatgga accagcaaca gccccagcgg taaccaccaa tcttctttg ccaatagacc  
1440

:gtaaaatca tcagtaaatg ggtcatcagc aacttcttct ggttgatacc tgagactgtt  
1500

:ggaaaaaaa attttaaacc cctgatttat atagatatct tcattgcatt acagcttct  
1560

:atgctaatt acatgtgact atcgtccaaat ttgcttctt ttgttagtgac attaaatttg  
1620

:tataaaag atggactaca tgtgataactc ctatggacgt taattgaaaa gaaagattgt  
1680

:ttataaaag aattggtttc ttggaaagca ggcaagactt tttctctgtg ttaggaaaga

## eolf-seql-S000001.txt

1740

gggaaatgg tttctgtac cattgttgg atttggaaatc actctgcagt ggacataagc  
1800

ttggccat agtttgtaa tctcaactaa cgccctacatt acattctcct tgatcggttct  
1860

gttattacg ctgtttgtg aacctgtaga aaacaagtgc ttttatctt gaaattcaac  
1920

aacggaaag aatatgcata gaataatgca ttctatgttag ccatgtcact gtgaataacg  
1980

tttcttgca tatttagcca ttttgattcc tgtttgattt atacttcctt gttgctacgc  
2040

aaaccgatc aaagaaaaatc gaacttcagt tttacaatct gtatgcctaa aagcgggtac  
2100

accgttat ttactgact tgtttaatg attcgctttt gtaagaatca gatggcatta  
2160

gcttgggtt acaatgccat attggatat gacataacag gaaacagtat tgtatgat  
2220

tttataaaat gctataaaaga aatattgtgt ttcatgcatt cagaaatgtat tgtaaaaatt  
2280

ccccaaactg gttcgacctt tgcaagatacc cataacctat gttgagcctt gcttaccagc  
2340

aaagaatatt tttaatgtgg atatctaatt ctaaagtctg ttccattttaga agcaattggc  
2400

atctttct atactttata tactttctc cagtaataca tgtttacttt aaaaattgtt  
2460

gtgtgaaga aaaacctta actgagaaat atggaaacccg tcttaatttt ccattggcta  
2520

gtatggaaatt aatattgtat tttaaaaatg catattgatc actataattc taaaacaatt  
2580

tttaaataa accagcaggt tgctaaaaga aggcatatc tctaaagtta tttaatagg  
2640

gtatagca gtaattttaa atttaagagt tgctttaca gttaacaatg gaatatgcct  
2700

tctgctat gtctgaaaat agaagctatt tattatgagc ttctacaggt atttttaat  
2760

agcaagca tggtgaattt aaaatatgaa taaccccacc caacaatttt cagtttattt  
2820

## eolf-seql-S000001.txt

ttgctttgg tcgaacttgg tgtgtgttca tcacccatca gttatttgg agggtgtta  
2880

tctatatga atattgttc atgtttgtat gggaaaattt tagctaaaca tttcattgtc  
2940

ccagtcgc aaaagaagca caattctatt gctttgtctt gcttatagtc attaaatcat  
3000

actttaca tatattgctg ttacttctgc tttctttaaa aatatagtaa aggtgttt  
3060

tgaagtcac aagatacata tatttttatt ttgacctaataa tttgtacagt cccattgtaa  
3120

tgttggttc taattataga tgtaaaatga aatttcattt gtaattggaa aaaatccaat  
3180

aaaaaggata ttcatttaga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa  
3240

aaaaaaaaa a  
3251

210> 39  
211> 2855  
212> DNA  
213> Homo sapiens

400> 39  
agtggcagt tatatagacc ggccggcgag cacgcgtgtg tgccggacgca gttgcgtgag  
60

gtttgtac tatttcgtt gctgtggtgc agagctagtt cctctccagc tcagccgcgt  
120

gtttggac atatttgact ctttccccc caggttgaat tgaccaaagc aatggtgatg  
180

gaaggccta gtccccgtct ggtccccggg gaatttgtga gacagtattt cacactgctg  
240

ccaggccc cagacatgct gcatacgat tattggaaaga actttctta tgtccatggg  
300

tattggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg  
360

tgtgtatgt cacaactt caccaactgc cacaccaaga ttccatgt tgatgctcat  
420

cacgctaa atgatgggtgt ggttagtccag gtgatggggc ttctctctaa caacaaccag  
480

## eolf-seql-S000001.txt

cttgagga gattcatgca aacgttgtc cttgctcctg aggggtctgt tgcaaataaa  
540

tctatgttc acaatgatat cttagatac caagatgagg tctttggtgg gtttgcact  
600

agcctcagg aggagtctga agaagaagta gaggaacctg aagaaagaca gcaaacacct  
660

agggtggtac ctgatgattc tggaaacttcc tatgatcagg cagttgtcag taatgacatg  
720

aagaacatt tagaggagcc tggctgaa ccagagcctg atcctgaacc agaaccagaa  
780

aagaacctg tatctgaaat ccaagaggaa aagcctgagc cagtattaga agaaactgcc  
840

ttaggatg ctcagaagag ttcttctcca gcacctgcag acatagctca gacagtacag  
900

agacttga ggacatttc ttggcatct gtgaccagta agaatcttcc acccagtgg  
960

tgttccag ttactggat accacctcat gttgttaag taccagcttc acagccccgt  
1020

cagagtcta agcctgaatc tcagattcca ccacaaagac ctcagcggga tcaaagagtg  
1080

jagaacaac gaataaatat tcctcccaa aggggaccca gaccaatccg tgaggctgg  
1140

gcaaggtg acattgaacc ccgaagaatg gtgagacacc ctgacagtca ccaactttc  
1200

tggcaacc tgcctcatga agtggacaaa tcagagctta aagatttctt tcaaagttat  
1260

aaacgtgg tggagttcg cataacagt ggtggaaat taccaattt tggtttgg  
1320

gtttgatg attctgagcc tggcagaaa gtccttagca acaggccat catgttcaga  
1380

tgaggtcc gtctgaatgt cgaagagaag aagactcgag ctgccaggaa aggcgaccga  
1440

agataatc gcctcgggg acctggaggc cctcgaggtg ggctgggtgg tggaaatgaga  
1500

ccctcccc gtggaggcat ggtgcagaaa ccaggattt gagtggaaag gggccttgcg  
1560

eolf-seql-s000001.txt  
cacggcagt gaatcttcat ggatcttcat gcagccatac aaaccctggt tccaacagaa  
1620  
ggtgaattt tcgacagcct ttggtatctt ggagtatgac cccagtcgt tataaactgc  
1680  
taagttgt ataattttac ttttttgtg tgttaatggt gtgtgctccc tctccctctc  
1740  
tccctttcc tgaccttag tcttcactt ccaattttgt ggaatgatat ttttaggaata  
1800  
cggaactttt aaagaagcaa aaaaaaagac tgaatttcct tgcttacttt gcatacacag  
1860  
ctggatttt tttttttttt ttacagccat ttccccaaag gaatgtcttg catattactg  
1920  
cattggta tgtttcatc attggaatat ttcttatttt ctacgtgtt gaaaagcctg  
1980  
aagaataac aggatttgat aatatttga aggcaggaaa aacccaaatt gtttcttctt  
2040  
jagagtcat gactacccctc tgggtggag aaattgccat tggaaaattt gacaattttg  
2100  
ttctcactg gtatgttaa aaactgaata aaaggaatag aattttttt tgataaagga  
2160  
zacaaaaca attctaaaac ctaactgttt ttaccattga aatttaaattt gtgataatag  
2220  
:tttaaatg tctagaatgc aactgatagg ctttcttga actgttagtt ttttgaagt  
2280  
jtttttca tgtttaattt gtatttgtaa aaaaacaaaaa agcaaaaaaa ttccccaaac  
2340  
zagataaca accagagcaa aactgttgtg cttcttattt atcttgatt tcagtcttgg  
2400  
aattgttta aaaaaaaaaat ctagattgt tttatttaggt tcagagtagt tgggaaatta  
2460  
agaatccct ctttcatcac tttgtgtatg tctttgtta acatattgt tatgccttat  
2520  
ctaaaattt agtctcaaac tggaatgcct ttgaagacag atgcttctat agaggttctt  
2580  
jacctaaat agttcagcat ttgttattttt attctggat ctaatcagat tcctaattcat  
2640  
;cccgtaag aaggaatgtt actttaatat tggactttgc tcatgtgctc gtgtccgcatt

eolf-seql-S000001.txt

2700

tttttttt cttaaaatca tagccatatg gtaaaatttc tattttgtta tggttcttt  
2760

tattgatgg gcatgcagtg ggtgttactt ggaaatggcc aatttttatt aaaatatttc  
2820

ggaagaaaa tttaaaaaaaaaaaaaaaa aaaaa  
2855

210> 40  
211> 1396  
212> DNA  
213> Homo sapiens

400> 40  
cgttaattaa aaggcggcgg aagaaggtgg gagggtcatg acgcagcgag tttcagtcgt  
60

acttttctg ggggcatcgc ggcgtcccct ttttttgcc tttaaagtaa aacgtcgccc.  
120

gacgcaccc cccgcgtatt tcggggggcg gaggcggcgg gccacggcgc gaagagggc  
180

gtgctgacg ccggccggc acgtggcgt gttgtgggg ggagggcgc cggccgcgc  
240

gggttccgg gcgggttggga gcgcgcgagc tagcgagcga gaggcagccg cccccgcgc  
300

gcgcgcgc ctgttatgccg ctctctcccg gcgcgcgcgc cgccgatcac agcagcagga  
360

ccaccgcgc ccgcgggttga tgtgggtggg ccggggctga ggaggccgcc aagatgccgc  
420

gtccaagtc ccggaagatc gcgcgcgc gctaccggc tgtggggaaa tcctcattga  
480

jattcaatt ttttgaaggc caatttgtgg actcctacga tccaaccata gaaaacactt  
540

:acaaaagtt gatcacagta aatggacaag aatatcatct tcaacttgta gacacagccg  
600

jcaagatga atattctatc ttccctcaga catactccat agatattaat ggctatattc  
660

:gtgttattc ttttacatca atcaaaaagtt ttgaagtgtat taaagttatc catggcaaat  
720

jttggatat ggtggggaaa gtacaaatac ctattatgtt ggttggaaat aagaaagacc

## eolf-seql-S000001.txt

780

gcataatgga aagggtgatc agttatgaag aaggaaagc tttggcagaa tcttggaatg  
840

agctttttt ggaatcttct gctaaagaaa atcagactgc tgtggatgtt tttcgaaggaa  
900

aattttgga ggcagaaaaa atggacgggg cagcttcaca aggcaagtct tcatacgctcg  
960

gatgtgatt ctgctgcaaa gcctgaggac actggaaata tatttacacct gaagaagcaa  
1020

ctgcccgtt ctccttgaag ataaactatg cttctttttt cttctgttaa cctgaaagat  
1080

:catttggg tcagagctcc cctcccttca gattatgtta actctgagtc tgtccaaatg  
1140

:ttcacttc cattttcaaa ttttaagcaa tcataatttc aatttatata ttgtatttct  
1200

:atattatg accaagaatt ttatcgcat taattttca gtgttagtttgg ttgtttaaaa  
1260

:atgtaatc atcaaaatga tgcatattgt tacactacta ttaacttaggc ttcatgtatat  
1320

:tgttttat ttcatgtgt taaatgtata cttgtaaata aaatagctgc aaacctcaaa  
1380

:aaaaaaaaa aaaaaaa  
1396

?10> 41  
?11> 2589  
?12> DNA  
?13> Homo sapiens

:accaggga gatttctcca ttttcctctt gtctacagtgc ggctacaaa tctgggattt  
60

:ttattact tcttttttt tcgaactaca cttggctcc tttttttgtg ctgcactttt  
120

:accctttt tccctccctc ctgtgctgct gcttttgat ctcttcgact aaaattttt  
180

:tccggagt gtatattaatc ggttctgttc tgtcctctcc accaccccca cccccctccc  
240

:cggtgtgt gtgccgctgc cgctgttgcc gccgccgctg ctgctgctgc tcgccccgtc

eolf-seql-S000001.txt

300 :tacaccaa cccgaggctc tttgttccc ctcttggatc tgttgagtt cttttgtgaa  
360 :agccagca tgggtgccca gttctccaag accgcagcga agggagaagc cgccgcggag  
420 :gcctgggg aggccggctgt ggcctcgatcg cttccaaag cgaacggaca ggagaatggc  
480 :cgtgaagg taaacggcga cgcttcgccc gcggccgccc agtcgggcgc caaggaggag  
540 :gcaggcca acggcagcgc cccggccgccc gacaaggagg agccgcggc cgccggagc  
600 :ggccggcgt cgccctcctc ggccgagaaa ggtgagccgg ccgcgcgcgc tgcccccgag  
660 :cggggcca gcccggtaga gaaggaggcc cccgcggaag gcgaggctgc cgagccggc  
720 :ggccacgg ccgcggaggag agaggccgcg tcggccgcct cctcgacttc ttgcggcaag  
780 :cgaggacg gggccacgcc ctgcggcagc aacgagaccc cgaaaaaaaaaa aaagaagcgc  
840 :ttccttca agaagtcttt caagctgagc ggcttctcct tcaagaagaa caagaaggag  
900 :tggagaag gcgggtgaggg tgaggcgccc gctgccgaag gcggcaagga cgaggccgccc  
960 :gggcgagg aggcggcagc gggcgaggag ggggcggcgg gtggcgaccc gcaggaggcc  
1020 :cccccagg aggccgctgt cgccgcagag aagccgcccgc ccagcgacga gaccaaggcc  
1140 :cgaggagc ccagcaaggt ggaggagaaa aaggccgagg aggccggggc cagcgccgccc  
1200 :ctgcgagg cccctccgc cgccggccccc ggccgcgcgc cggagcagga ggccggccccc  
1260 :ggaggagc ccgcggccgc cgccgcgcgc tcagcctgcg cagcccccacaggaggcc  
1320 :ccccgagt gcagtccaga agccccccca gcggaggcgg cagagtaaaa gagcaagctt  
1380

## eolf-seql-S000001.txt

:gtgagata atcgaagaac ttttctcccc cgttgttg ttggagtggt gccaggtact  
1440

:tttgaga acttgtctac aaccaggat tgatttaaa gatgtcttt ttatattac  
1500

:tttttaa gcaccaaatt ttgttgtttt ttttttctc ccctcccac agatcccac  
1560

:aaatcatt ctgttaacca ccattccaac aggtcgagga gagcttaaac acttcttcc  
1620

:tgccttgt ttctctttt ttttttattt ttgcgtcatca gtattaatgt tttgcatac  
1680

:tgcatctt tattcaaaag tgtaaacttt ctgtcaat ctatggacat gcccataat  
1740

:aggagatg ggtgggtcaa aaaggatat caaatgaagt gatagggtc acaatgggaa  
1800

:ttgaagtg gtgcataaca ttgccaaaat agtgtgccac tagaaatggt gtaaaggctg  
1860

:ttttttt ttttttaaa gaaaagttat taccatgtat tttgtgaggc aggtttacaa  
1920

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1980

:aaaaaaaaa aaaaacgatc atagtcttag gagttcattt aaaccatagg aactttcac  
2040

:atctcatg ttagctgtac cagtcgtga ttaagtagaa ctacaagttg tataggctt  
2100

:tgtttatt gctggtttat gaccttaata aagtgttaatt atgtattacc agcagggtgt  
2160

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2220

:cttccac cctgcccatt tttgtaaaac tgcagtcatc ttggacctt taaaacacaa  
2280

:tttaact caaccaagct gtgataagtg gaatggttac tgtttatact gtggtatgtt  
2340

:tgattaca gcagataatg ct当地tttc cagtcgtctt tgagaataaa ggaaaaaaaa  
2400

:ttcagatg caatggttt gtgttagcatc ttgtctatca tgtttgtaa atactggaga  
2460

eolf-seql-S000001.txt

gctttgacc aatttgacctt agagatggaa tgtaactttg cttacaaaaa ttgctattaa  
2520

ctcctgctt aagggtttctt aattttctgt gagcacacta aaagcgaaaa ataaatgtga  
2580

taaaatgt  
2589

210> 42  
211> 1466  
212> DNA  
213> Homo sapiens

400> 42  
gggctgctg ggactcgctg tcggttggcg actccggac gtttaggtgt ttgttggcc  
60

ggttctgag gccttgcttc tctttacttt tccactctag gccacgtgc cgcagttacca  
120

acctgggag gagttcagcc gcgcgtgccga gaagctttac ctgcgtgacc ctatgaaggc  
180

gtgtggtt ctcaaataata ggcattctga tggaaacttg tgtgttaaag taacagatga  
240

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300

:cacagtcaa ctaatgcgac ttatggtagc caaggaagcc cgcaatgtt ccatggaaac  
360

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420

:agagaaaag gttggacacag aaagtacttt atgtaactaa gtgggctgtt cagaagctt  
480

:ggtcattt ttgttaattt tcttttaat tacttttagag agcttagggat gcaaatgttt  
540

:agtttagaa agcctttatt tactttgga aattgaacaa gaaatgcac tgcgttttagaa  
600

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660

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720

.aaaagaac attaaatgtt accatttgtt cagatccatg tattttggag cataaaatgt  
780

eolf-seql-S000001.txt  
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840  
gcattgtta tacatactgt gtacctaatt atgtatagca gtgttagtctc aattatatct  
900  
aaagtaatt gtgactaaca agtatgcttt gccttatttc cacattaaa ctacctgtta  
960  
tataaggga tttgttagtat cagttgttg agcaatgact ttgaatctag tttcagtga  
1020  
cagaagcag cagttatttg agtgtatgaa tggaatgatg atcactgtgc tataatgtac  
1080  
gaaaccacc atattacaga aatatttact acatatttc catctgtagt ttctcagaag  
1140  
gctatggat tagttgaac tgtcaaatcc ttgcatactt ctgtgacacc cctgccatt  
1200  
tctgtcttt aattaaccaa ggtgttaggt gtgactgtca caactgttat gtttccagt  
1260  
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1320  
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1380  
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1440  
:agatcagta aataaaatat tagata  
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?11> 1815  
?12> DNA  
?13> Homo sapiens

!100> 43  
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120  
:cgggctgg ccaaggcagcc gtcttccgc cagtactccg gctacctcaa aagctccggc  
180  
:caaggcacc tccactactg gtttggag tcccagaagg atcccggagaa cagccctgtg  
240

eolf-seql-S000001.txt  
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300  
gccccttcc tggtccagcc agatgggtgc accctggagt acaaccccta ttcttgaaat  
360  
tgattgcca atgtgttata cctggagtcc ccagctgggg tgggcttctc ctactccgat  
420  
acaagttt atgcaactaa tgacactgag gtcgcccaga gcaatttga gccccttcaa  
480  
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540  
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600  
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720  
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780  
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840  
cccggtgtg ctggaggggt gcccagccat ttttaggtatg agaaggacac tgggtggc  
900  
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1080  
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1140  
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1200  
agacatgg cctgcaattt catggggat gagtggttg tggattccct caaccagaag  
1260  
ggaggtgc agcgccggcc ctggtagtg aagtacgggg acagcgggga gcagattgcc  
1320  
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eolf-seql-s000001.txt  
1380  
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1440  
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1500  
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ccccttcc cagagccctg tacatcccag actgggccca gggtctccca tagacagcct  
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1680  
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?12> DNA  
?13> Homo sapiens  
  
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420  
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## eolf-seql-S000001.txt

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540

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600

:ctttctta tccgagagag tgagagcgct cctggggact tctcccttc tgtcaagttt  
660

jaaacgatg tgcagcactt caaggtgctc cgagatggag ccggaaagta ctccctctgg  
720

:ggtaagt tcaattcttt gaatgagctg gtggattatc acagatctac atctgtctcc  
780

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840

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900

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960

:cggcatgt ttccccgcaa ttatgtcacc cccgtgaacc ggaacgtcta agagtcaaga  
1020

jcaattatt taaagaaagt gaaaaatgta aaacacatac aaaagaatta aacccacaag  
1080

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1140

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1200

:ttacctat aaattaagaa gagttttat tacaaatttt cactgctgct cctctttccc  
1260

:ccttgtc tttttttca tcctttttc tcttctgtcc atcagtgcatt gacgtttaag  
1320

:cacgtata gtccttagctg acgccaataa taaaaaacaa gaaaccaagt gggctggat  
1380

:tctctatg caaaatgtct gtttagttg gaatgactga aagaagaaca gctgttcctg  
1440

:ttcttcgt atatacacac aaaaaggagc gggcagggcc gctcgatgcc tttgctgttt  
1500

:cttcctcc agaggagggg acttgttagga atctgccttc cagcccagac ccccagtgt  
1560

## eolf-seql-s000001.txt

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1620

sctgagaaa gcccacctgg gctgggcgcg gtggctcacg cctgtaatcc cagcactttg  
1680

jaggccaag gtgggcggat cacaaggta ggagttcgag accaacctag ccaacatggt  
1740

aaaccccg tctactaaa aataagaaat tagccgggtg tggcacgcac ctgtagtc  
1800

jctacttgg gagcctgagg caggagaatc gcttgaacct gggaaagtgg a gttgagtga  
1860

ccgggaccg tgccattgta ctccagcctg ggtgacagag cgagattccg tctaaaaaaaa  
1920

aaaaaaaaa agcccacctg aaagcctgtc tctttccact ttgttgcccc ttccagtgg  
1980

:statcgagc atgttgtttt ttcatagtgc cttttcctt atttcaaggg ttgcttctga  
2040

:gggtgtttt ttttttttt ttaatttgtt ttgttttaaa ataagttaaa ggcagtccag  
2100

jcttttcag ccaatttgc tcctactctg tgtaaatatt ttccctccg ggcaggggag  
2160

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2220

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2280

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2340

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2400

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2460

:cagacaag gagagcggag gaggaagtca tgggaacgca gcctccagtt gtacgagg  
2520

:actattcc tatgctgggg tacacagtga gagtactcac ttttcaactg tcttgctctt  
2580

:attggggcc atggctttca tcctgtgtcc cctgacctgt ccaggtgagt gtgagggcag  
2640

eolf-seql-S000001.txt

actgggaag ctggagtgt gcttgcctt ccctccca tgggctgtgt tgactgctgc  
2700

ccccacccc taccgatggt cccaggaagc agggagagtt ggggaaggca agattggaaa  
2760

acaggaaga ccaaggcctc ggcagaactc tctgtttctt ctccacttctt ggtccctgt  
2820

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2880

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2940

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3000

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3120

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3180

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3240

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3300

:aaaaaaaaaaaaaaa  
3315

?10> 45  
?11> 2225  
?12> DNA  
?13> Homo sapiens

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:gggcgcccgg gcgcgtggcgcc cggtgccggg aggaaaacca attctgtgtc ctcggaggac  
120

:cagccca gttggcccca ggcgaaaccc agcctggagc ttgcaggcag gacgactgtt  
180

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240

eolf-seql-S000001.txt  
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720  
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900  
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960  
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1080  
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## eolf-seql-S000001.txt

1380

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1440

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1500

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1560

aagacaca gaggttctct tctgctttga gcagtttgat gagtcaccc tgctgcacct  
1620

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1680

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1740

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1800

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1860

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1920

ccacgctg gagatcaacc ccaggcacgc gctcatcaag aagctgaatc agtcgcgc  
1980

gcgagcct ggcctggctc agctgctggt ggatcagata tacgagaacg ccatgattgc  
2040

tctggactt gttgacgacc ctagggccat ggtggccgc ttgaatgagc tgttgtcaa  
2100

ccctggag cgacactgac agccaggggg ccagaaggac tgacaccaca gatgacagcc  
2160

acccctt gagctttatt tacctaaatt taaaggatt tcttaacccg aaaaaaaaaa  
2220

aaa  
2225

10> 46  
11> 1501  
12> DNA  
13> Homo sapiens

00> 46  
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## eolf-seql-S000001.txt

60

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120

ttcgtgatg ctataaatca gggtatggat gaggagctgg aaagagatga gaaggtattt  
180

tgcttggag aagaagtgc ccagtatgat gggcataca aggttagtcg agggctgtgg  
240

agaaatatg gagacaagag gattattgac actcccatat cagagatggg ctttgctgga  
300

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360

:ctccatgc aagccattga ccaggttata aactcagctg ccaagaccta ctacatgtct  
420

:tgtggcattc agcctgtgcc tatagtcttc aggggaccca atggtgccctc agcaggtgta  
480

:tgtccccgc actcacagtg ctttgctgcc tggatgggc actgcccagg cttaaaggtg  
540

:cagtcctt ggaattcaga gnatgctaaa ggacttatta aatcagccat tcgggataac  
600

:tccagtgg tggtgctaga gaatgaattt atgtatgggg ttcctttga atttctcccg  
660

:agctcagt caaaagattt tctgattcct attggaaaag caaaaataga aaggcaagga  
720

:acatataa ctgtggtttc ccattcaaga cctgtgggcc actgcttaga agctgcagca  
780

:gctatcta aagaaggagt tgaatgtgag gtgataaata tgcgtaccat tagaccaatg  
840

:catggaaa ccatagaagc cagtgtcatg aagacaaatc atcttgtaac tgtggaagga  
900

:ctggccac agtttggagt aggagctgaa atctgtgcc a gatcatgga aggtcctgcg  
960

:caatttcc tggatgctcc tgctgttcgt gtcactggtg ctgatgtccc tatgccttat  
1020

:aaagattt tagaggacaa ctctatacct caggtcaaag acatcatatt tgcaataaag  
1080

:aacattaa atattttgtt tggacttcaa tatcaagtgc ttgaaatttta tttgaaatac  
1140

eolf-seql-s000001.txt

:gctggcac tgcacctgga tttgtactgc aagacctgac tattcataaaa ggaaaacgat  
1200  
:ctaaagca acagcaggtt ttttgtaca gggaaagtta aatgtgttg tgtatggaaa  
1260  
:tctccact ctcctcccct agatgccatg ctcccttttgc tctgttacgg ttgccatgtt  
1320  
:ttgaataa caaattatac cacattttat cctctctcac cacaaggaca aagtatggat  
1380  
:ggcagagt cctgatgaaa gatgtatcca aacaagataa cttatatgtt taaaattaaaa  
1440  
:atataataa cacatttact gtttagttgt tttgataagg aataaaggaa tttctaacat  
1500  
  
1501  
  
:10> 47  
:11> 699  
:12> DNA  
:13> Homo sapiens  
  
!00> 47  
itccggtgt ggtcgacggg tcctccaaga gtttggggcg cggaccggag taccttgcgt  
60  
:agttatgt cggcgctcggt agtgtctgtc atttcgcggc tcttagaaga gtacttgag  
120  
:cactccgc agcgtctgaa gttgctggac gcgtacctgc tgtatataact gctgaccggg  
180  
:gctgcagt tcggttactg tctccctcggt gggacccttcc cttcaactc ttttctctcg  
240  
:cttcatct cttgtgtggg gagtttcatc cttagcggtt gcctgagaat acagatcaac  
300  
:acagaaca aagcggattt ccaaggcatc tccccagagc gagccttgc tgattttctc  
360  
tgccagca ccattcctgca cttgttgc atgaacttttgc ttggctgaat cattctcatt  
420  
cttaatttgc aggagtagga gactaaaaga atgttcaactc tttgaatttc ctggataaga  
480  
tctggaga tggcagctta ttggacacat ggattttctt cagatttgac acttactgct  
540

## eolf-seql-S000001.txt

gctctgctt tttatgacag gagaaaagcc cagagttcac tgtgtgtcag aacaacttc  
600

aacaaacat ttattaatcc agcctctgcc tttcattaaa tgtaaccctt tgctttcaa  
660

ttaaagaac tccatgccac tcctcaaaaa aaaaaaaaaa  
699

210> 48  
211> 829  
212> DNA  
213> Homo sapiens

400> 48  
ggggagtga aagcgaaagc ccgggcgact agccgggaga ccagagatct agcgactgaa  
60

agcatggc caagccgtgt ggggtgcgcc tgagcgggga agcccgc当地 caggtggagg  
120

ttcagaca gaatctttc caggaggctg aggaattcct ctacagattc ttgccacaga  
180

atcatata cctgaatcag cttttgc当地 aggactccct caatgtggct gacttgactt  
240

cctccgggc cccactggac atccccatcc cagaccctcc acccaaggat gatgagatgg  
300

acagataa gcaggagaag aaagaagtcc ataagtgtgg atttctccct gggaatgaga  
360

gtcctgtc cctgcttgcc ctggtaagc cagaagtctg gactctaaa gagaaatgca  
420

ctgggtat tacatggatc caacacctga tccccaaatg tgaagatgga aatgattttg  
480

gttagcaat ccaggagaag gtgctggaga gggtaatgc cgtcaagacc aaagtggaaag  
540

ttccagac aaccattcc aagtacttct cagaacgtgg ggatgctgtg gccaggcct  
600

aaggagac tcatgtaatg gattaccggg ctttgtc当地 tgagcgagat gaggcagcct  
660

ggggagct cagggccatg gtgctggacc tgagggcctt ctatgctgag ctttatcata  
720

atcagcag caacctggag aaaattgtca acccaaaggg tgaagaaaag ccatctatgt  
780

## eolf-seql-S000001.txt

>tgaacccg ggactagaag gaaaataaaat gatctatatg ttgtgtgga  
829

?10> 49  
?11> 965  
?12> DNA  
?13> Homo sapiens

!00> 49  
!gcttgcagg tctatgactt acccagaagg caacgcttct ctttctggtc aaaaatggctg  
60

:aaggcaggc cgtttcagca tcaggcaagt ggctggatgg tattcgaaaa tggtattaca  
120

:gctgcagg attcaataaa ctggggtaa tgcgagatga tacaatatac gaggatgaag  
180

:gtaaaaga agccataaga agacttcctg agaacctta taatgacagg atgttcgca  
240

:aagagggc actggacctg aacttgaagc atcagatctt gcctaaagag cagtggacca  
300

:tatgaaga gaaaaatttc taccttgaac cgtatctgaa agaggttatt cggaaagaa  
360

:gaaaagaga agaatggca aagaagtaat catgtagttg aagtctgtgg atgcagctgt  
420

:tgaagatg gttaaacttg aaacaaacaa ttttaagaat tatttggct gaagatgtt  
480

.ctttaaat aaatgtctat tgtaatggct ggagttttg aattccaaac cttatactga  
540

aactactg aatccctta ctgttaaatt ttttccaaa ctttcaagat atattnatgtt  
600

gtttaact gctacttgga gtcagaagc cactttatca gtttcctca ctggttggat  
660

cctatcag tttatggaag gatataactt ccgtaagtta catccttatg gaagctactg  
720

taaaaagaa ggggtatgc accccctagt ttgccaaagat tgagaaatag cctttcact  
780

tatgcaaa cagatttgat tttgcacccat atcatttaaa aagaaattat gtctgcaccc  
840

acataggc atacttaagt aatatacata ctcctgtgct aacatgtata ctagaaaaca  
900

## eolf-seql-S000001.txt

aaagatgtt agaaaaataa aagtataaag acaaaatcaa aaaaaaaaaa aaaaaaaaaa  
960

aaaa  
965

?10> 50  
?11> 653  
?12> DNA  
?13> Homo sapiens

100> 50  
ggacgaggg cgcggtgggtg aggaaggta ggtcttagaa ctctaactcc ttgccactca  
60

jaaatgtcc tcccttcag aatatgcctt ccgcattgtct cgtctcagtg cccggctatt  
120

jgtgaagtc accaggccta ctaattccaa gtctatgaaa gtggtaaac tgtttagtga  
180

:tgtcccttg gccagaaga aggagactta tgattggat ccaaattcacc acacttacgc  
240

jaactcatg cagacgctcc gatttcttgg actctacaga gatgagcatc aggatttat  
300

jatgagcaa aaacgactaa agaagctcg tggaaaggag aaaccaaaga aaggagaagg  
360

iaaagagca gcaaaaagga aatagtgttgc tccctcaag agggagactt tcttcctcag  
420

sgcggagag aagaaagtgc atttattgtc tttccacata ttggaggaat gtcatcttcc  
480

iaatgaagt ttatggag gaacacagtc atctccttgg taaaatctaa tccggttaca  
540

.gtggctgg tttcttgaac acattctaac tgtgaaaaat tatcttggcc ttggccgtgt  
600

itgtgaggt ttacctgatt ctctaattgaa ataaataacct aagttattgt ttg  
653

10> 51  
11> 1610  
12> DNA  
13> Homo sapiens

00> 51  
gcgcctgtt cgccttagcag gtcctctacc ggcttattcc tgtgcccgtt cttcatcggc

## eolf-seql-s000001.txt

60  
:aggggccca ctgagacgtt tctgcctccc tctttcttcc tccgctctt ctctccctc  
120  
:gttttagtt tgccctggagc ttgaaaggag aaagcacggg gtcgccccaa accccttctg  
180  
:tctgccca tcacaagtgc cactaccgcc atgggcctca ctatctcctc cctcttctcc  
240  
:actatttg gcaagaagca gatgcgcatt ttgatggttg gattggatgc tgctggcaag  
300  
:aaccattc tgtataaaact gaagtttaggg gagatagtca ccaccattcc taccattggt  
360  
:taatgtgg aaacagtaga atataagaac atttgttca cagtatggga tggatggatgg  
420  
:agatagaa ttaggcctct ctggaagcat tactccaga atacccaggg tcttattttt  
480  
:ggtagata gcaacgatcg tgaaagaatt caggaagtag cagatgagct gcagaaaatg  
540  
:tctggtag atgaatttag agatgcagtg ctgctacttt ttgcaaaca acaggatttg  
600  
:aaatgcta tggccatcag tgaaatgaca gataaactag ggcttcagtc tcttcgtAAC  
660  
:aacatggc atgttcaagc cacttgtgca acacaaggaa ctggctgtt tgaaggactt  
720  
:ctggctgt caaatgagct ttcaaaacgt taaatgaaat tggatatcta accaaggaca  
780  
:tttgataa aattggtcta ggcttgttac aacaaaatta gtttgtatct tggttattaa  
840  
:gtatctg ggactggttt gggcagaata ttaaacttat ttgttgcca attattgttt  
900  
:cgagtata atgttgctat ttagcaatgt gcttggttt aaagaaattc tccttggaa  
960  
.aagtatcc tcttttaatt ttactccca taagcgtaaa tgcctggaca tagctttgt  
1020  
.acctttaa ataaattgtt tgagtgttt tgagccccag acaaataatg tttaaagtt  
1080  
cccttgct actttactga tacctttatc attcctgaga cagtttgcta attaaaaat  
1140

## eolf-seql-S000001.txt

tagcattcc atttgtatTT atttctctcc cttgccaaaa agatttcta atactgcttg  
1200  
  
accagccag agaaagatcc aaaacactac tcagctctc tgcactgagg aaattttcc  
1260  
  
cctacattg actcctggcc tacatcagcc aaacttaacc ttggtgggt ttggatttga  
1320  
  
agccaatta gttctgtgct ggttgcaaag aattgatatt tagatggttt ttaatactca  
1380  
  
cagattgtc ttcccatatt gtgtctttt tatgttgcatt gttgcttttgc ttatcagcct  
1440  
  
atTTTTGC tcagtatATG atagttctgc tgatgttttgc tttattggc agacatatct  
1500  
  
atTTTGGAGGTTTGAAACACTCATCAAATTTCGATGAAT ACATTTCTT CATAACCCAT  
1560  
  
:ggaaattat tcctaataaaa atgataaaat acgtaaaaaaaaaa aaaggaattc  
1610

?10> 52  
?11> 4221  
?12> DNA  
?13> Homo sapiens

:100> 52  
:agcgccagt ggagttcgct gcgcgctgtt gggggccacc tgtctttcg cttgtgtccc  
60  
  
:120> 52  
:tttctagt gtcgcgctcg agtcccgacg ggccgctcca agcctcgaca tgtcgtacaa  
120  
  
:180> 52  
:acgtggta acggcccaga agcccaccgc cgtgaacggc tgcgtgaccg gacactttac  
180  
  
:240> 52  
:cggccgaa gacttaaacc tgttgattgc caaaaacacg agattagaga tctatgtgg  
240  
  
:300> 52  
:ccgccccag gggcttcggc ccgtcaaaga ggtggcatg tatggaaaga ttgcggcat  
300  
  
:360> 52  
:tagctttc aggcccaagg gggagagcaa ggacctgctg tttatcttga cagcgaagta  
360  
  
:420> 52  
:atgcctgc atcctggagt ataaacagag tggcgagagc attgacatca ttacgcgagc  
420  
  
:480> 52  
:atggcaat gtccaggacc gcattggccg cccctcagag accggcatta ttggcatcat  
480

## eolf-seql-S000001.txt

jaccctgag tgccggatga ttggcctgcg tctctatgtat ggcctttca aggttattcc  
540

:tagatcgc gataataaaag aactcaaggc cttcaacatc cgccctggagg agctgcatgt  
600

:tttgatgtc aagttcctat atgggtgcc agcacctact atttgcttg tctaccagga  
660

:ctcagggg cggcacgtaa aaacctatga ggtgtctctc cgagaaaagg aattcaataa  
720

:gcccttgg aaacaggaaa atgtcgaagc tgaagcttcc atggtgatcg cagtcccaga  
780

:cctttggg ggggccatca tcattggaca ggagtcaatc acctatcaca atggtgacaa  
840

:acctggct attgcccctc ctatcatcaa gcaaagcacg attgtgtgcc acaatcgagt  
900

:accctaatt ggctcaagat acctgctggg agacatggaa ggccggctct tcatgctgct  
960

:tggagaag gaggaacaga tggatggcac cgtcactctc aaggatctcc gtgtagaact  
1020

:ttggagag acctctattt ctgagtgctt gacatacctt gataatggtg ttgtgtttgt  
1080

:ggtctcgc ctgggtgact cccagcttgt gaagctcaac gttgacagta atgaacaagg  
1140

:cctatgtttaa gtggccatgg aaacctttac caacttagga cccattgtcg atatgtgcgt  
1200

:tggacctg gagaggcagg ggcaggggca gctggtaact tgctctgggg ctttcaagga  
1260

:gttcttttgcggatcatcc ggaatggaat tggaaatccac gagcatgccatgcatt  
1320

:caggcatc aaaggattat ggccactgcg gtctgaccct aatcgtgaga cttatgacac  
1380

:tggtgctc tctttgtgg gccagacaag agttctcatg ttaaatggag aggaggtaga  
1440

:aaaccgaa ctgatgggtt tcgtggatga tcagcagact ttcttcgtgc gcaacgtggc  
1500

:atcagcag ctatccaga tcacttcagc atcggtgagg ttggctctctc aagaacccaa  
1560

eolf-seq1-S000001.txt  
jctctggtc agtgaatgga aggaggccta ggccaagaac atcagtgtgg cctcctgcaa  
1620  
agcagccag gtgggtggcag ctgtaggcag ggccctctac tatctgcaga tccatcctca  
1680  
jagctccgg cagatcagcc acacagagat ggaacatgaa gtggcttgct tggacatcac  
1740  
scattagga gacagcaatg gactgtcccc tctttgtgcc attggcctct ggacggacat  
1800  
cggtcggt atcttgaagt tgccctttt tgaactactg cacaaggaga tgctgggtgg  
1860  
jagatcatt cctcgctcca tcctgatgac caccttgag agtagccatt acctcctttg  
1920  
jccttggga gatggagcgc ttttctactt tgggctcaac attgagacag gtctgtttag  
1980  
jaccgttaag aagggtgactt tgggcaccca gcccaccgta ttgaggactt ttcgttctct  
2040  
ctaccacc aacgtctttg cttgttctga ccggcccaact gtcatctata gcagcaacca  
2100  
aattggtc ttctcaaatg tcaacctcaa ggaagtgaac tacatgtgtc ccctcaattc  
2160  
jatggctat cctgacagcc tggcgctggc caacaatagc accctcacca ttggcaccat  
2220  
jatgagatc cagaagctgc acattcgcac agttcccctc tatgagtctc caaggaagat  
2280  
gctaccag gaagtgtccc agtgttctgg ggtcctctcc agccgcattg aagtccaaaga  
2340  
cgagtggg ggcacgacag ctttgaggcc cagcgcttagc acccaggctc tgtccagcag  
2400  
taagctcc agcaagctgt tctccagcag cactgctcct catgagacct cctttggaga  
2460  
aggtggag gtgcataacc tacttatcat tgaccaaacac acctttgaag tgcttcattgc  
2520  
accagttt ctgcagaatg aatatgcct cagtctggtt tcctgcaagc tgggcaaaga  
2580  
ccaacact tacttcattg tgggcacagc aatggtgtat cctgaagagg cagagccaa  
2640  
agggtcgc attgtggtct ttcaagtattc ggatggaaaa ctacagactg tggctgaaaa

eolf-seql-S000001.txt

2700  
jaagtaaaa ggggcccgtgt actctatggt ggaatttaac ggaaagctgt tagccagcat  
2760  
iatagcacg gtgcggctct atgagtggac aacagagaag gacgtgcgca ctgagtgcaa  
2820  
:actacaac aacatcatgg ccctctaccc gaagaccaag ggcgacttca tcctggtgg  
2880  
jaccttatg cgctcagtgc tgctgcttgc ctacaagccc atggaaggaa actttgaaga  
2940  
ittgctcga gactttaatc ccaactggat gagtgctgtg gaaatcttgg atgatgacaa  
3000  
:ttctgggg gctgaaaatg ccttaactt gtttgtgtgt caaaaggata gcgcgtgccac  
3060  
ictgacgag gagcggcagc acctccagga gtttgtctt ttccacotgg gcgagttgt  
3120  
iatgtcttt tgccacggct ctctggtaat gcagaatctg ggtgagactt ccaccccccac  
3180  
:aaggctcg gtgctttcg gcacggtaa cggcatgata gggctggta cctcaactgtc  
3240  
tagagctgg tacaacctcc tgctggacat gcagaatcga ctcaataaag tcatcaaaaag  
3300  
tgtgggaag atcgagcact cttctggag atcctttcac accgagcgg agacagaacc  
3360  
ccacaggt ttcatcgacg gtgacttgat tgagagtttc ctggatatta gccgccccaa  
3420  
.tgaggag gtggggcaaa acctacagta tgacgatggc agcggatgaa agcgagaggc  
3480  
.ctgcagac gacctcatca aggttggaa ggagctaact cggatccatt agccaagggc  
3540  
ggggcccc ttgctgacc ctcccaaag gcttgccct gctgccctcc ccctcctctc  
3600  
ccatcgtc ttctggcca tggaggcct tcccttaagc cagctgcccc cagagccaca  
3660  
tccccat gtggaaagtgg ggcgggcttc atagagactt gggaaatgagc tgaaggtgaa  
3720  
attttctc cctggatttt taccagtctc acatgattcc agccatcacc ttagaccacc  
3780

## eolf-seql-S000001.txt

:gccttgat tggtgttgcc agttgtcctc cttccgggga aggatttgc agttcttgg  
3840  
:gaaaggaa gctgtgcgtg tgtgtgtgtg tatgtgtgtg tgtgtatgtg tatctcacac  
3900  
:atgcatttgcattttt atttagatttgcagtgtagg gagttgtggg tagtggggaa  
3960  
:gggttagg agggttcat tgtctgtgaa gtgagacatt cctttactt ttcttctatt  
4020  
:ctctgaga gcatcaggcc tagaggcctg actgccaagc catggtagc ctgggtgtaa  
4080  
:cctggaga tggtgatga tccccacgcc acagccctt tgtctctgca aactgccttc  
4140  
:cgaaaga agaagggtggg aggatgtgaa ttgttagttt ctgagttta ccaaataaaag  
4200  
:gaatataaa gaagaaaaaa a  
4221

:10> 53  
:11> 1470  
:12> DNA  
:13> Homo sapiens

:100> 53  
:agccgcca gcgaggctgg ggatgggggc gccgctgctc tctccggct gggagccgg  
60  
:ctgccggc cggcgctggt ggatgctgct ggcgcctg ctgccggcgc tgctgctgg  
120  
:ggcccgcg gggccctgg tggagggct ctactgcggc acgcggact gctacgaggt  
180  
:tggcgctg agccgctcg cggcaaggc ggagatcgcg cggccctacc gccagctggc  
240  
:ggcgctac caccctgacc gctaccggcc ccagccggaa gacgaggggcc ccggcgac  
300  
:cgagagc gccgaggagg cttcctgct ggtggcaacc gcctacgaga cactcaaggt  
360  
:ctcaggca gctgcagagc ttcaacagta ctgtatgcag aatgcctgca aggatgcct  
420  
:tggtggtt gttccagctg gaagtaaccc cttccggag cctagatcct gtgcttact  
480

## eolf-seql-S000001.txt

:gaagactc gagagaagg ttgctgaggaa tgccttcaag cacaaggta tgaatgactg  
540

:ttcaagtc tcaagaaaac actttccct aacttttaga gatattcag cccttcctg  
600

:ggctggtc ctatagccaa aatcacagat attcatgagt ttctacttga gtgagaaaac  
660

:gggtgaagg aatagaattt taaatagtaa taactgcttg tttttttgt gcaagtactt  
720

:atacataa gataaacaaa aacccatcca ccaaacatac caaatgcac ctcttcata  
780

:tgtagttac taagatttct ataccctggaa tatcatgtat gtttcatatta ctggatgtt  
840

:attttagg aaggaaaata gtttgttta tttaaacaac tgaataactta taaactgttg  
900

:ccctggaag ttatatttc cataaaaaat ttgttctttt gtcataatttataattcct  
960

:atgaagac cagaaagtac aaattgctgg gaggaagaat aggctttatt aatcaactga  
1020

:tgttgatt tttctaaatg ggaagattgc tttatttta acactaatta tgggagcaga  
1080

:cttagcaa acttcttgg aaaagttaat gttatgtat gcattaggct gccccatcgt  
1140

:atataaat gaagcagatt tgatTTTGT attcttacgt ttctctgctt ttagttgtg  
1200

:tgtactta aagaaataca gaatttcata tattaaaaa tgttaaaat gtgacccaca  
1260

:acattgtt aatgattaaa aactaacatg aaaatattac aacctaaaag aattcttaac  
1320

:cacaagtg ttttacttcg acgatgtgcc tttgatttaa tttggacac ttttttagaa  
1380

:atacatta ttctgttttgc caacggtctt tgaagagctt ggaaataaaa tttctgctt  
1440

:taatcaaa aaaaaaaaaa aaaaaaaaaa  
1470

10> 54  
11> 3321

eolf-seql-S000001.txt

212> DNA  
213> Homo sapiens

400> 54  
:gtgagtcataactcgga ggcgttgggt cggtccctgc tattccggcg cctccactcc  
60

:ccccccgccc ggtctgctct gtgtgccatg gacggcattg tcccaagatat agccgttgg  
120

:aaaggcggg gatctgacga gctttctct acttgtgtca ctaacggacc gtttatcatg  
180

jcagcaact cggcttctgc agcaaacgga aatgacagca agaagttcaa aggtgacagc  
240

jaagtgcag gcgtccccc tagagtgatc cacatccgga agctcccat cgacgtcacg  
300

:gggggaag tcataccctt gggctgccc ttgggaagg tcaccaacct cctgatgctg  
360

:ggggaaaa accaggcctt catcgagatg aacacggagg aggctgccaa caccatggtg  
420

:ctactaca cctcggtgac ccctgtgctg cgccggccagc ccatctacat ccagttctcc  
480

:ccacaagg agctgaagac cgacagctct cccaaaccagg cgccggccca ggccggccctg  
540

:ggcgggtga actcggtcca gtcggggAAC ctggccttgg ctgcctcgcc ggccggccctg  
600

:ccgcaggga tggcgatggc cgggcagagc cccgtgctca ggatcatcggt ggagaacctc  
660

:ctaccctg tgaccctgga tgtgctgcac cagatttctt ccaagttcgac cacagtgttg  
720

:gatcatca cttcaccaa gaacaaccag ttccaggccc tgctgcagta tgccggacccc  
780

:gagcgccc agcacgccaa gctgtcgctg gacgggcaga acatctacaa cgccctgctgc  
840

:gctgcgca tcgacttttc caagctcacc agcctcaacg tcaagtacaa caatgacaag  
900

:ccgtgact acacacgccc agacactgcct tccggggaca gccagccctc gctggaccag  
960

:atggcccg cggccttcgg tgcacctgggt ataatctcag cctctccgtatgcaggagct  
1020

eolf-seql-S000001.txt  
gttccctc ccaccttc cattcctcaa gctgcaggcc tttccgttcc gaacgtccac  
1080  
jcgccctgg cccccctggc catcccctcg gcggcggcgg cagctgcggc ggcaggtcgg  
1140  
:cgccatcc cgggcctggc gggggcagga aattctgtat tgctggtcag caaccta  
1200  
:agagagag tcacacccca aagcctctt attctttcg gcgtctacgg tgacgtgcag  
1260  
:gcgtgaaga tcctgttcaa taagaaggag aacgccttag tgcatggc ggacggcaac  
1320  
:ggcccccagc tggccatgag ccacctgaac gggcacaagc tgcacggaa gcccatccgc  
1380  
:cacgcctc cgaaggaccca gaacgtgcag ctgccccgcg agggccagga ggaccaggc  
1440  
:gaccaagg actacggcaa ctcacccctg caccgcttca agaagccggg ctccaaga  
1500  
:ccagaaca tattcccgcc ctggccacg ctgcacctct ccaacatccc gccctcagtc  
1560  
:cgaggagg atctcaaggt cctgtttcc agcaatgggg gcgtcgtcaa aggattcaag  
1620  
:cttccaga aggaccgcaa gatggcactg atccagatgg gctccgtgga ggaggcggc  
1680  
:ggccctca ttgacctgca caaccacgac ctggggaga accaccacct ggggtctcc  
1740  
:ctccaagt ccaccatcta gggcacagg ccccacggc cgggccccct ggcacaact  
1800  
:catcattc cagagaaaag ccacttaaa aacagctgaa gtgaccttag cagaccagag  
1860  
:tttatttt tttaaagaga aatcagtttta cctgtttta aaaaaatcaa atctagttca  
1920  
:ttgctcac cctgcggta cagggacagc tcaggctttt ggtgactgtg gcagcggag  
1980  
.cccggccc tccacacccg gggccagacc ctcggggcca tgccttggtg gggctgtgt  
2040  
.ggcgtggg gcctgcaggt gggcgccccg accacgactt ggcttccttgcgccttaaaa  
2100  
.cctgcctt cctgcagcca cacacccacc cggggtgtcc tggggaccca aggggtgggg

## eolf-seql-s000001.txt

2160

jgtcacacc agagagaggc agggggcctg gccggctcct gcaggatcat gcagctgggg  
2220

jcgccggcc gcggctgcga caccccaacc ccagccctct aatcaagtca cgtgattctc  
2280

:ttcaccccc gcccccaggc cttcccttc tgccccagg cggtctccc gctgctccag  
2340

:gcggagct ggtcgacata atctctgtat tatatacttt gcagttcag acgtctgtgc  
2400

:agcaatat ttccagttga ccaaataattc taatctttt tcatttatat gcaaaagaaa  
2460

:gttttaag taactttta tagcaagatg atacaatggt atgagtgtaa tctaaacttc  
2520

:tgtggtat taccttgtat gctgttactt ttattttatt cttgttaatt aagtcacagg  
2580

:ggaccagg tttccagaga gcaggcgggg ccgcccagtg ggtcaggcac agggagccccc  
2640

:tcctatct tagagccct gagttcagg gaaggggcgg gcgtgtcgcc gcctctggca  
2700

:gcctccgg ttgccttaca ccacgccttc acctgcagtc gcctagaaaa ctgtctctca  
2760

:cttcaggg tttttcttc cttcaaattt tggaccaaag ttcatttct gtgtttgcc  
2820

:cctctgtat gctgggaccc ggaaggcggg cgctcctcct gtcttctctg tgctctttct  
2880

:cgcccccgg cgccctgtcc cggggcgtct cctaggatcc ctttccgtaa aagcgtgt  
2940

:aagggtgt aaatattttat aattttttat acctgttgtg agacccgagg ggcggcggcg  
3000

:gtttttta tggtgacaca aatgtatatt ttgctaacag caattccagg ctcagtatttg  
3060

:accgcgga gccacagggg accccacgca cattccgttg ctttacccga tggcttgc  
3120

:cgagaga accgattaaa accgtttgag aaactcctcc cttgtcttagc cctgtgttcg  
3180

:gtggacgc tgttagaggca gttggccag tctgtacctg gacttcgaat aaatcttctg  
3240

## eolf-seql-S000001.txt

atcctcgct ccgttccgcc taaaaaaaaaaa aaaaaaaaaaaa aaaaaaaaaaaa aaaaaaaaaaaa  
3300

aaaaaaaaaaa aaaaaaaaaaaa a  
3321

?10> 55  
?11> 2181  
?12> DNA  
?13> Homo sapiens

100> 55  
jaagccgag cggcgcaagag gacgccaggg cgcgccgc agccaccac cctccggacc  
60

:ggcagctg ctgaccgcgc atcgccatgg cccgcggaa agccaaggag gagggcagct  
120

:aagaaatt catctggaac tcagagaaga aggagttct gggcaggacc ggtggcagtt  
180

:tttaagat ctttctattc tacgtaatat tttatggctg cctggctggc atttcatcg  
240

:acccatcca agtgatgctg ctcaccatca gtgaatttaa gcccacatcat caggaccgag  
300

:gccccgccc aggattaaca cagattcctc agatccagaa gactgaaatt tccttcgtc  
360

.aatgatcc caagagctat gaggcatatg tactgaacat agtttagttc ctggaaaagt  
420

:aaagattc agcccagagg gatgacatga ttttgaaga ttgtggcgat gtgcccgatg  
480

.ccgaaaga acgaggagac tttaatcatg aacgaggaga gcgaaaggtc tgcatgattca  
540

:cttgaatg gctggaaat tgctctggat taaatgatga aacttatggc tacaaagagg  
600

.aaaccgtg cattattata aagctcaacc gagttctagg cttcaaacct aagcctccca  
660

:aatgagtc ctggagact tacccagtga tgaagtataa cccaaatgtc cttcccgatc  
720

:tgcactgg caagcgagat gaagataagg ataaagttgg aatgtggag tattttggac  
780

ggcaactc ccctggttt cctctgcagt attatccgta ctatggcaaa ctccctgcagc  
840

## eolf-seql-s000001.txt

:aaataacct gcagccccctg ctggccgtac agttcaccaa tcttaccatg gacactgaaa  
900

:cgcataga gtgttaaggcg tacggtgaga acattggta cagtgagaaa gaccgtttc  
960

:ggacgttt tgatgtaaaa attgaagtta agagctgatc acaagcacaa atctttcca  
1020

:agccattt aataagttaa aaaaagatac aaaaacaaaa acctactagt ctngaacaaa  
1080

:gtcatacg tatgggacct acacttaatc tatatgctt acactagctt tctgcattta  
1140

:aggttaga atgtaaatta aagtgttagca atagcaacaa aatatttatt ctactgtaaa  
1200

:acaaaaga aaaagaaaaa ttgagccttg ggacgtgccc attttactg taaattatga  
1260

:ccgtaact gacttgttagt aagcagtgtt tctggccct aagtattgct gccttgtgt  
1320

:ttatttag tgtacagtac tacaggtgca tactctggc attttcaag ccatgtttta  
1380

:gtatctgt tttctacttt atgtgagcaa ggtttgctgt ccaaggtgta aatattcaac  
1440

:gaataaaaa ctggcatggt aattttttt ttttttttt ttttgggttt tggtctttc  
1500

:aggtaatg gcccatcgat gagcatttt aacatactcc atagtcttt cctgtggtgt  
1560

:ggtcttta ttttatttt tttcctgggg gctgggggtgg gggtttgta tgggggaact  
1620

:ccttaaaa tttaagtga cactacagaa aaacacaaaa aggtgatggg ttgtgttatg  
1680

:tgtattga atgctgtctt gacatctctt gccttgtcct ccgtatgtt ctaaagctgt  
1740

:ctgagatc tggatctgcc catcactttg gctagtgaca gggctaatta atttgcttta  
1800

:catttct ttactttcc tttttcctt tctggaggca tcacatgctg gtgctgtgtc  
1860

:tatgaatg tttaaccat tttcatggtg gaagaatttt atatttatgc agttgtacaa  
1920

eolf-seql-S000001.txt  
:tttatttt ttctgcaaga aaaagtgtaa tgtatgaaat aaaccaaagt cacttgaaa  
1980  
  
:aataaaatc tttatTTTga actttataaa aagcaatgca gtaccccata gactgggttt  
2040  
  
:atgttgtc tacagtgcAA aatccatgtt ctaacatATG taataATTgc caggagtaca  
2100  
  
:gctcttgt tgatcttgta ttcaGTCAGG ttAAAACAAC ggacaATAAA agaatgaaca  
2160  
  
:aaaaaaaaaaaaaaa aaaaaaaaaaaa a  
2181  
  
?10> 56  
?11> 1330  
?12> DNA  
?13> Homo sapiens  
  
!00> 56  
:aacctttc caagggagtg gttgtgtat cgccatctta gggaaaagat gttctcgatcc  
60  
  
:ggcgcacc tggcgcgggc gaaccccttc aacacGCCAc atctgcagct ggtgcacgat  
120  
  
:tctcgcccc acctccgcag cagctccccca gggcccacgg gccagccccg ccgcctcg  
180  
  
:cctggcag ccgcgcgcgt ggaagagtac agttgtgaat ttggctccgc gaagtattat  
240  
  
:actgtgtg gctttgggtgg ggtcttaagt tgtggtctga cacacactgc tgggttccc  
300  
  
.ggatttag tgaatgccc tatgcaggtg gaccccaaa agtacaaggg catatttaac  
360  
  
:attctcag ttacacttaa agaggatggt gttcgtgggt tggctaaagg atgggctccg  
420  
  
:tttccttg gctactccat gcagggactc tgcaagtttg gctttatga agtctttaaa  
480  
  
cttgtata gcaatatgct tggagaggag aatacttatac tctggcgac atcactata  
540  
  
ggctgcct ctgccagtgc tgaattcttt gctgacattg ccctggctcc tatggaagct  
600  
  
taagggttc gaattcaaAC ccagccaggt tatGCCAACA ctttgaggga tgcagctccc  
660

eolf-seql-S000001.txt  
aatgtata aggaagaagg cctaaaagca ttctacaagg gggttgctcc tctctggatg  
720  
jacagatac catacaccat gatgaagtgc gcctgcttgc aacgtactgt tgaagcactg  
780  
icaagtttg tggttcctaa gccccgcagt gaatgttcaa agccagagca gctggttgt  
840  
:attttagt caggttacat agctggagtc ttttgtgcaa ttgtttctca ccctgctgat  
900  
:tgtggtat ctgtgttcaa taaagaaaaa ggttagcagtgc ttctctggt cctcaagaga  
960  
.tggattta aaggtgtatg gaagggactg tttgcccgta tcatcatgat tggtaccctg  
1020  
.tgcactac agtggtttat ctatgactcc gtgaaggtct acttcagact tcctcgccct  
1080  
.ccccacctg agatgccaga gtctctgaag aaaaagcttgc gtttaactca gtatggat  
1140  
.aagcaaat gtggactgaa tctgcttgc gatcagtgtt tgaagaaagt gcaaaaggaa  
1200  
.tttatata tttgacagtgc taggaaatttgc tctattcctg atataattac tgttagtactc  
1260  
.gcttaagg caagagttc agatttactg ttgaaataaaa cccaaactgtt catgaaaaaa  
1320  
.aaaaaaaa  
1330  
  
10> 57  
11> 3214  
12> DNA  
13> Homo sapiens  
  
00>. 57  
gtgggagg agccagcggc cggggagggtt ctagtctgtt ctgtcttgc gcagccggcc  
60  
  
ttctgcgc ggtcacgcggc agccagcggc tgggccttgc accggccgt agccccccca  
120  
  
ttcgcggc ccacccctt accatggacc cccgcaaagt gaacgagctt cgggccttgc  
180  
  
aaaatgtt taagcaggat ccgagcgttc tgcacaccga gaaaatgcgc ttccctgagg  
240

eolf-seq1-S000001.txt

jtggttgg a gacatgggt ggtaaagtac cacctgctac tcagaaagct aaatcagaag  
300  
  
aaataccaa ggaagaaaaa cctgatagta agaagggtgga ggaagactta aaggcagacg  
360  
  
accatcaag tgaggaaagt gatctagaaa ttgataaaga aggtgtgatt gaaccagaca  
420  
  
gatgctcc tcaagaaatg ggagatgaaa atgcggagat aacggaggag atgatggatc  
480  
  
gcaaatga taaaaaagtg gctgctattg aagccctaaa tcatggtaa ctccagaaag  
540  
  
attgactt attcacagat gccatcaagc tgaatcctcg cttggccatt ttgtatgcca  
600  
  
aggcccag tgtttcgta aaattacaga agccaaatgc tgccatccga gactgtgaca  
660  
  
gccattga aataaatcct gattcagctc agccttacaa gtggcggggg. aaagcacaca  
720  
  
cttctagg ccactggaa gaagcagccc atgatctgc cttgcctgt aaattggatt  
780  
  
gatgaaga tgctagtgc a tgcgtaaag aagtcaacc tagggcacag aaaattgcag  
840  
  
catcgag aaagtatgag cgaaaacgtg aagagcgaga gatcaaagaa agaatagaac  
900  
  
gttaagaa ggctcgagaa gagcatgaga gagccagag ggaggaagaa gccagacgac  
960  
  
tcaggagc tcagtatggc tctttccag gtggcttcc tggggaaatg cctgtaatt  
1020  
  
.ccggagg aatgcctgga atggagggg gcatgcctgg aatggctgga atgcctggac  
1080  
  
aatgaaat tcttagtgtat ccagaggttc ttgcagccat gcaggatcca gaagttatgg  
1140  
  
gctttcca ggatgtggct cagaacccag caaatatgtc aaaataccag agcaacccaa  
1200  
  
ttatgaa tctcatcagt aaattgtcag ccaaatttgg aggtcaagcg taatgtcctt  
1260  
  
gataaata aagcccttgc tgaaggaaaa gcaacctaga tcaccttatg gatgtcgcaa  
1320  
  
atacaaac cagtgtacct ctgaccttct catcaagaga gctggggtgc tttgaagata

## eolf-seql-S000001.txt

1380

tccctaccc ctctccccca aatgcagctg aagcattta cagtggtttgcattagggt  
1440

ttcattcag ataatgtttt cctacttagga attacaaact ttaaacactt tttaaatctt  
1500

aaaatattt aaaacaaatt taaagggcct gttaattctt atattttctt ttactaatca  
1560

:ttggattt ttttcttga attattggca gggatatatac ttatgtatgg aagattactg  
1620

:ctgagtga aataaaagtt attagtgcga ggcaaacata actcatttga ggataaaagtt  
1680

:tgttggat atgtggttcc tgatgcattt tgacttgtct ttttaatgc tttatcttt  
1740

:tttaaaga tttatcca taaaactaat tgggaccacc cgtatttcag taggacctgg  
1800 . .

:agggattt gaagtacttg gcagggcagc agcaatcttgc tggatgtttt ttttgc  
1860

:ccttggc aggttgcctt taaatcttac actgtggtga agggatgtttt ttttgc  
1920

:tgcagtag agttggagta cttagttctc ttgttgtcca gtatatctaa taagtgtttt  
1980

:atattatt tccacgtaag gaaataagg tagtactttt ctttttatat ttctatgctt  
2040

:aattctct ttcctagtca aaaattgccc aaatctgtgt ttgccttcgtt ctgcatacat  
2100

:gtctccct tactttctt gagctaaaga caggctttt ccaccggcat catcactgct  
2160

:catcatta acagcgtaat tatacaagca tatttaatgc tgagttaat ttaatatgt  
2220

:acatatgg taattgttagg gtaataccca caacaactgt agtttcttac ttggccaaga  
2280

:atgcttat ttaagtgtta gacttccatt ctggcaaaat ctgccttat cagaagacat  
2340

:gaaagagg gattccctt ggtgtttggc cttctactta gaaaaaccta ttgcagttag  
2400

:tatcttgtt agtattcattt tttgtattctt gaagataagg tttgaattaa attgatacac  
2460

## eolf-seql-S000001.txt

cagagggga accgattttt tttatccaat gtgaattata aatgagataa tccacagtta  
2520

tcatttgtgg agttgttgag actatgaaag actcattgtc tttgtattca gctcttaat  
2580

gtgttaacta tatccccacc tctgcttgct ttcttccct cccctccaat gataaagaaa  
2640

tgataaatt ttctgttggt cattcaattc ttattttaaa taagactaag tataggcatt  
2700

tacctgaca ttgctacgtt tctaccagtg tttcaattta aagtgcgtgt gttaaaaaac  
2760

ttttcaagg gataaggcct tctgtacttt gcttatttga agaatcagtg gtaggagcag  
2820

gaagtaaat tctatggagt acatttctaa aataccacat ttctgaaatc ataaataagt  
2880

tattcaggt tctaaccctt tgctgtacac aagcagacag aaatgcacatc gttacataaa  
2940

gagaaaaaag ctattatgct gatggagcat gcttttaaa tcctttaaaa acactcacca  
3000

ataaaacttg cattttagct tgtgtgttct tttgttaatg tgttagagttc tcctttctcg  
3060

atattgccag tgtgtacttg gcttaactca agaacagttt cttctggatt ccttatttga  
3120

:tatttaac ctaattataat tctaataattt caaatattac cataagtggg taaaagtaaa  
3180

:tcctcttc tgaaaaaaaaaaaaaaa aaaaaaaa aaaa  
3214

?10> 58  
?11> 2973  
?12> DNA  
?13> Homo sapiens

?20>  
?21> misc\_feature  
?22> (1275)..(1275)  
?23> n is a, c, g, t or u

?20>  
?21> misc\_feature  
?22> (2933)..(2933)

eof-seql-S000001.txt  
?23> n is a, c, g, t or u  
400> 58  
jaggcaaat gttaatgagg caatgttaaa tatggaccca atgtcagaca aatacataga  
60  
aggagtaag ggccaactct catgcataag gtatcccattc ctatagcaaa tcagatata  
120  
tgtacgctt gatgccacaa attttttaaa aaattgtcca ttttgttgcg tgtgcaccc  
180  
gccataaa tttgagtcag caccagcgac agctctgcag tcctcctatg tggtactgat  
240  
tgtggttg cagagctca gtcacacga acacaatgca gctgagcagg caagcacagc  
300  
acagccag aaacagttcc gactctacag aacaagacga cctttaagtt tcccagagaa  
360  
tgagatgc tgatgttcaa gacgacacca cgggtaagat gttatttaaa tcagtaaaag  
420  
tgactttg gaatctttt ccttttctt ttaaaaaaa gtcaacgtta ggattaaata  
480  
tattcaat agcaagtgc tgcaccagaa atttgcgc gtgtcagttt agggatattt  
540  
tatacatt cagtcactct gtaaatatac atattgtttt cttttttttt gggcactgaa  
600  
atacagaa aaaaatcact ttataaaatg tgaggttat aggtactgtg ttggcttgaa  
660  
tttcaagt gcttttaca aagatattt tttttttttt acatacagat aaaaatttcg  
720  
gactgctt taatatctaa ataaaaatcta ccctatatac acacattgaa ttacattacc  
780  
cagagatt aaaaaaaaaa gacacgacag ccattttctt catctgagta agaaagcata  
840  
atcaaaaa tagtaatagc ctacaactgc aactattttt ttgcaaagaa tgctatttt  
900  
atattaag gctctagaaa gataaataag aaagaatatg gtttagaaaag gggggaggaa  
960  
gagaaaaat aaaggagaaa atgcaggaga gagtagggag agagtctctc tctaccacat  
1020  
cccaatga aggattaagc attgactata aatgaaggaa gctttgttag tttaatcact

## eolf-seql-S000001.txt

1080

gaacaatta taaaaggact cgacaacaac gaggtttatt gaaaattttg cctaatgcta  
1140

:tgaccat gcagatgcct aaactgtatt tgcatattaa aagaagggtg tatctgtttg  
1200

:tctaggct ttgatggat atcagatatt gaaaatgtct ctctgcctgt tcatccttct  
1260

:ttctcaca cctgntattt tatgcatttg tcctctccaa tgtatatgca cagagaggca  
1320

:ggcatgtg gactgttcag gcagaaactt gtctacatta ccatctggac tgcaagagaa  
1380

:ttatacat ttaaacctgt cttataacca ctttactgat ctgcataacc agttaacc  
1440

:ataccaat ctgaggaccc tggacatttc aaacaacagg cttgaaagcc tgccctgctca  
1500

:tacctcggtctgttgc acatgtctgc tgctaacaac aacattaaac ttcttgacaa  
1560

:ctgatact gcttatcaat ggaatcttaa atatctggat gtttctaaga acatgctgga  
1620

:aggttgtc ctcattaaaa atacactaag aagtctcgag gttctcaacc tcagtagtaa  
1680

:aactttgg acagttccaa ccaacatgcc ctccaaacta catatcggttgg acctgtctaa  
1740

:attctttg acacaaattc ttccaggtac attaataaac ctgacaaatc tcacacatct  
1800

:acctgcac aacaataagt tcacattcat tccagaccaa tctttgacc aactctttca  
1860

:tgcaagag ataacccttt acaataacag gtggtcatgt gaccacaaac aaaacattac  
1920

:acttactg aagtggatga tggaaacaaa agcccatgtg atagggactc catgttctac  
1980

:aaatatca tctttaaagg aacataacat gtatcccaca ctttctggat ttacctcaag  
2040

:tattcact gtaagtggga tgcagacagt ggacaccatt aactctctga gtgtggtaac  
2100

:aaccaaaa gtgaccaaaa tacccaaaca atatcgaaca aaggaaacaa cgtttgggtgc  
2160

## eolf-seql-S000001.txt

actctaagg aaagacacca cctttactag cactgataag gctttgtgc cctatccaga  
2220  
  
jatacatcc acagagacta tcaattcaca tgaagcagca gctgcaactc taactattca  
2280  
  
ctccaagat ggaatggtca caaacacaag cctcaactagc tcaacaaaat catccccaaac  
2340  
  
ccatgacc ctaagtatca cttagtggcat gccaaataat ttctctgaaa tgcccaaca  
2400  
  
gcacaacc cttaacttat ggagggaga gacaaccaca aatgtaaaga ctccattacc  
2460  
  
ctgtggca aatgcttgaa aagtaatgc ttcattttc ttattgctca atgttgtgg  
2520  
  
tgctggct gtctgagggc ctgcatttc taaaactaat gaaagcactc ctccctgatg  
2580  
  
cagttggg aaaatatgtc catacttaac cagtgattcg agctatattt aagtattcaa  
2640  
  
aaggccagt cttaacattt ctaactctga taaaatgaa gtaacttgc taaaataaaa  
2700  
  
aatgcaca atgtcttggc acttgctgct attttactgt cttaattaag taaaactaatg  
2760  
  
tttctttt ataaaaaaaaa taaaatgttt taaggctca atttattgca caaaatataa  
2820  
  
catctaaa cttaataatg tattttatgt atgttacac tgtcaaacat ctggaaaata  
2880  
  
aggcttat gctcataact gtgtcatttg gctttccagt cataccaaact ttnagcagaa  
2940  
  
aaaatgac ctcaccattt ttgttctagg gat  
2973  
  
10> 59  
11> 872  
12> DNA  
13> Homo sapiens  
  
00> 59  
ggcagcca tctcgccgtg agacagcaag tgtcgcgca cctgtgcgtatg ttgtcctcta  
60  
  
gccatgta ttcggctcct ggcagagact tggggatgga accgcacaga gccgcgggcc  
120

## eolf-seql-S000001.txt

:ttgcagct gcgatttcg ccctacgtt tcaacggagg tactatactg gcaattgctg  
180

:agaagattt tgcaattgtt gcttctgata ctcgatttag tgaagggttt tcaattcata  
240

:gcgggatag ccccaaatgt tacaattaa cagacaaaac agtcattgga tgcagcggtt  
300

:catggaga ctgtcttacg ctgacaaaga ttattgaagc aagactaaag atgtataagc  
360

:tccaataa taaggccatg actacggggg caattgctgc aatgctgtct acaatcctgt  
420

:tcaaggcg cttcttcca tactatgttt acaacatcat cggtggactt gatgaagaag  
480

:aagggggc tgtatacagc tttgatccag tagggtctta ccagagagac tccttcaagg  
540

:ggaggctc agcaagtgcc atgctacagc ccctgcttga caaccaggtt ggtttaaga  
600

:atgcagaa tgtggagcat gttccgctgt cttggacag agccatgcgg ctggtaaaag  
660

:gtcttcat ttctgcggct gagagagatg tgtacactgg ggacgcactc cgatctgca  
720

:tgtgacaa agagggcatc agggaggaaa ctgttcctt aaggaaggac tgatctgtgt  
780

:tcttatca ccaatcagtt cagacctggt tgattttgtt ctggaaact gtaccttgg  
840

:gttttggta tattaaaaga gaaacctgaa gt  
872

:10> 60  
:11> 356  
:12> DNA  
:13> Homo sapiens

00> 60  
.ttctctct cgcgcgcgggt gtggggcag caggcgcagc ccagcctcga aatgcagaac  
60

.cgccggcg agttcgtgga cctgtacgtg ccgcggaaat gctccgctag caatcgcatc  
120

cggtgccca aggaccacgc atccatccag atgaacgtgg ccgagggttga caaggtcaca  
180

## eolf-seql-S000001.txt

gcagggtta atggccagtt taaaacttat gctatctgctt gggccattcg taggatgggt  
240

agttagatg attccattct ccgattggcc aaggccgatg gcatcgtctc aaagaacttt  
300

gactggaga gaatcacaga tgtggaatat ttgtcataaa taaataatga aaacct  
356

210> 61  
211> 3069  
212> DNA  
213> Homo sapiens

400> 61  
jtttccgct gcatccagac ttccctcaggc ggtggctgga ggctgcgcattt ctggggcttt  
60

iacatacaa agggattgcc aggacctgctt gcggcggcgg cggcggcggg ggctggggcg  
120

jggggccgg accatgagcc gctgagccgg gcaaacccca ggccaccgag ccagcggacc  
180

:cggagcgc agccctgcgc cgccgaccag gctccaacca ggcggcgagg cggccacacg  
240

:cccgagcca gcgaccccccgg ggcgacgcgc gggccaggg agcgctacga tggaggcgct  
300

:tgtggccgg ggcgcgctca cgggtccccct gagggcgctc tgtctcctgg gctgcctgct  
360

:gccacgccc gccgcccgcgc cgtcgccccat catcaagttc cccggcgatg tcgccccaa  
420

:cggacaaa gagttggcaag tgcaataacctt gaacacccatc tatggctgcc ccaaggagag  
480

:gcaacctg tttgtgctga aggacacact aaagaagatg cagaagttct ttggactgcc  
540

:agacaggt gatcttgacc agaataccat cgagaccatg cggaagccac gctgcggcaa  
600

:cagatgtg gccaactaca acttcttccc tcgcaagccc aagtgggaca agaaccagat  
660

:catacagg atcattggct acacacctga tctggaccca gagacagtgg atgatgcctt  
720

:ctcggtgcc ttccaaagtct ggagcgatgt gacccactg cggtttctc gaatccatga  
780

## eolf-seql-S000001.txt

ggagaggca gacatcatga tcaactttgg ccgctggag catggcgatg gataccctt  
840

gacggttaag gacggactcc tggctcatgc ctgcgcggc ggcactggtg ttgggggaga  
900

tcccatttt gatgacgatg agctatggac cttgggagaa ggccaagtgg tccgtgtgaa  
960

tatggcaac gccgatgggg agtactgcaa gttcccttc ttgttcaatg gcaaggagta  
1020

aacagctgc actgatactg gccgcagcga tggcttcctc tggtgctcca ccacctacaa  
1080

:ttgagaag gatggcaagt acggcttctg tccccatgaa gccctgtca ccatggcgg  
1140

:aacgctgaa ggacagccct gcaagttcc attccgcttc cagggcacat cctatgacag  
1200

:gcaccact gagggccgca cggatggcta ccgctggcgc ggcaccactg aggactacga  
1260

:gcgacaag aagtatggct tctgccctga gaccgccatg tccactgttg gtgggaactc  
1320

:aagggtgcc ccctgtgtct tccccttac tttcctggc aacaaatatg agagctgcac  
1380

:gcgcggc cgcaagtgacg gaaagatgtg gtgtgcgacc acagccaaact acgatgacga  
1440

:gcgaagtgg ggcttctgcc ctgaccaagg gtacagcctg ttcctcggtt cagcccacga  
1500

:ttggccac gccatggggc tggagcactc ccaagaccct gggccctga tggcacccat  
1560

:cacacctac accaagaact tccgtctgtc ccaggatgac atcaaggca ttcaggagct  
1620

:atggggcc tctcctgaca ttgaccttgg caccggcccc acccccacac tggccctgt  
1680

:ctcctgag atctgcaaac aggacattgt atttcatggc atcgctcaga tccgtggta  
1740

:tcttcttc ttcaaggacc gtttcatttg gcggactgtg acgccacgtg acaagcccat  
1800

:ggccctg ctgggtggcca cattctggcc tgagctcccg gaaaagattt atgcggatata  
1860

eolf-seql-S000001.txt  
jaggccccca caggaggaga aggctgtgtt ctttcaggg aatgaatact ggatctactc  
1920  
jccagcacc ctggagcgag ggtacccaa gccactgacc agcctggac tgccccctga  
1980  
jtccagcga gtggatgccg ccttaactg gagaaaaac aagaagacat acatcttgc  
2040  
jgagacaaa ttctggagat acaatgaggt gaagaagaaa atggatcctg gcttcccaa  
2100  
jtcatcgca gatgcctgga atgccatccc cgataacctg gatgccgtcg tggacctgca  
2160  
jgcggcggt cacagctact tcttcaaggg tgcctattac ctgaagctgg agaaccaaag  
2220  
jtgaagagc gtgaagtttgc aagcatcaa atccgactgg ctaggctgct gagctggccc  
2280  
jgctcccac aggcccttcc tctccactgc ctgcataca ccgggcctgg agaactagag  
2340  
jggaccggg aggggcctgg cagccgtgcc ttcagctcta cagctaatca gcattctcac  
2400  
jctacctgg taatttaaga ttccagagag tggctcctcc cggtgcacaa gaatagatgc  
2460  
jactgtact cctcccaggc gccccttccc cctccaatcc caccaaccct cagagccacc  
2520  
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2580  
jacttcagg ctcttctcct ttcacaacct tctgtggctc acagaacct tggagccaat  
2640  
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2700  
jatggccag gtggccactc cagaccctg gctttcact gctggctgcc tttagaacctt  
2760  
jttacatta gcagtttgc ttgtatgcac tttgttttt tctttggtc ttgtttttt  
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jtccactta gaaattgcat ttccctgacag aaggactcag gttgtctgaa gtcactgcac  
2880  
jtgcatctc agcccacata gtgatggttc ccctgttcac tctacttagc atgtccctac  
2940  
agtctctt ctccactgga tggagggaaa ccaagccgtg gttcccgct cagccctccc

eolf-seql-S000001.txt  
3000  
jccctccc ttcaaccatt cccatggga aatgtcaaca agtatgaata aagacaccta  
3060  
:gagtggc  
3069  
  
?10> 62  
?11> 2876  
?12> DNA  
?13> Homo sapiens  
  
!00> 62  
:ctgtgagc agcgagatcc agggacagag tctcagcctc gccgctgctg ccgcgcgc  
60  
  
jccagaga ctgctgagcc cgtccgtccg cgcaccac ccactccgga cacagaacat  
120  
  
:agtcatgg ataaaaatga gctggttcag aaggccaaac tggccgagca ggctgagcga  
180  
  
.tgatgaca tggcagcctg catgaagtct gtaactgagc aaggagctga attatccat  
240  
  
.ggagagga atttcttc agttgcttat aaaaatgttg taggagcccg taggtcatct  
300  
  
.gagggtcg tctcaagtat tgaacaaaag acggaaggtg ctgagaaaaa acagcagatg  
360  
  
:tcgagaat acagagagaa aattgagacg gagctaagag atatctcaa tgatgtactg  
420  
  
:tcttttgg aaaagttctt gatccccat gttcacaaag cagagagcaa agtcttctat  
480  
  
.aaaaatga aaggagatta ctaccgttac ttggctgagg ttgccgctgg tgatgacaag  
540  
  
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600  
  
aatgcaac caacacatcc tatcagactg ggtctggccc ttaacttctc tgtgttctat  
660  
  
tgagattc tgaactcccc agagaaagcc tgctcttttg caaagacagc ttttgatgaa  
720  
  
cattgctg aacttgatac attaagtgaa gagtcataca aagacagcac gctaataatg  
780  
  
attactga gagacaactt gacattgtgg acatcgata cccaaggaga cgaagctgaa

eolf-seql-S000001.txt  
840  
caggagaag gaggggaaaa ttaaccggcc ttccaaacttt tgtctgcctc attctaaaat  
900  
cacacagta gaccatttgt catccatgct gtcccacaaa tagtttttg tttacgattt  
960  
gacaggtt tatgttactt ctatttgaat ttctatatattt cccatgtggc ttttatgttt  
1020  
atattaggg gagtagagcc agttaacatt tagggagtta tctgtttca tcttgaggta  
1080  
caaatatgg ggatgtggaa ttttataaca agttataagt gtttggcata gtactttgg  
1140  
cattgtgg cttcaaaagg gccagtgtaa aactgcttcc atgtctaagc aaagaaaaact  
1200  
ctacatac tggttgtcc tggcgggaa taaaaggat cattggttcc agtcacaggt  
1260  
agtaatttgg tgggtacttt aaggtttggc gcacttacaa ggctgtggta gaatcataacc  
1320  
atggatac cacatattaa accatgtata tctgtggat actcaatgtg tacacctttg  
1380  
tacagctg cagaagtgtt ccttagaca aagttgtgac ccattttact ctggataagg  
1440  
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1500  
ctacactc attttatttg tatttaatg ttttaggcaa cctaagaaca aatgtaaaag  
1560  
aagatgca ggaaaaatga attgcttggc attcattact tcatgtatat caagcacagc  
1620  
taaaaacaa aaacccatgt atttaacttt tttttaggat tttgctttt gtgattttt  
1680  
tttttttt ttgataactg cctaacatgc atgtgctgtt aaaatagtta acagggaaat  
1740  
cttgagat gatggctagc tttgttaat gtcttatgaa atttcatga acaatccaag  
1800  
taattgtt aagaacacgt gtattaaatt catgtaagtg gaataaaagt ttatgaatg  
1860  
cttttcaa ctacttctc tacagtttt catgtaaatt agtcttggtt ctgaaacttc  
1920

eolf-seql-s000001.txt

ctaaaggaa attgtacatt ttttgaatt tattccttat tccctcttgg cagctaattgg  
1980

stcttacca agtttaaaca caaaatttat cataacaaaa atactactaa tataactact  
2040

tttccatgt cccatgatcc cctctttcc tccccaccct gaaaaaaaaatg agttccattt  
2100

tttctggga gagggggggga ttgatttagaa aaaaatgttag tttgttccat taaaatttt  
2160

gcataatggc attttctaac ttaggaagcc acaatgttct tggcccatca tgacattggg  
2220

agcattaac tgtaagttt gtgcttccaa atcactttt ggtttttaag aatttcttga  
2280

actcttata gcctgccttc aattttgatc ctattttctt tctatttgc aggtgcacaa  
2340

attacccccc ctgttttagc cttctgtctt gtcaccaacc attcttactt ggtggccatg  
2400

acttggaaa aaggccgcat gatcttctg gctccactca gtgtctaagg caccctgctt  
2460

cttgcttg catcccacag actatccc tcatcctatt tactgcagca aatctctcct  
2520

gttgcgtt gactgtgttt atctcccttt aaaaccctac ctatcctgaa tggctgtca  
2580

gtctgcct taaaaatcct tcctctttct tcctcctcta ttctctaaat aatgatgggg  
2640

aagtata cccaaagctc actttacaaa atatccctc agtactttgc agaaaaacacc  
2700

acaaaaat gccatTTAA AAAAGGTGTA TTTTTCTT TAGAATGTAAG CTCCTCAAG  
2760

cagggaca atgtttctg tatgttctat tgtgcctagt acactgtaaa tgctcaataa  
2820

attgatga tggaggcag tgagtcttga tgataagggt gagaaactga aatccc  
2876

:10> 63  
:11> 3401  
:12> DNA  
:13> Homo sapiens

eolf-seql-S000001.txt

400> 63  
ggtagcggcccccggag ctcaccgcccc ctgctccctt ctccgaccctt ttgagccgtg  
60  
  
ccgttgccca gatgtccaca atggaaacg aggccaggta cccggcggag atgtgctccc  
120  
  
cttgacaa tggatgaaatt aaaaggctgg gcaggagggtt taagaagttt gacttggacaa  
180  
  
atcagggtc tctgagcgtg gaggagttca tgtccctgcc ggagctgcgc cacaacccgt  
240  
  
tgtgcggcg agtgatcgac gtcttcgaca ccgacggta tggagaagtgg gacttcaagg  
300  
  
atccatcctt ggggacctcc cagttcagcg tcaagggcga cgaggagcag aagttgaggt  
360  
  
gcgttcag catttacgac atggataaag atggctacat ttccaacggg gagctttcc  
420  
  
tgtgctgaa gatgtatggtg ggcaacaacc tgacggactg gcagctccag cagctggcgt  
480  
  
aaaaaccat catcatcctg gacaaggatg gcgatggaa gatatccttt gaggaattca  
540  
  
gctgtggc cagagacctg gagatccaca agaagctggt cctcatcgta tgagccttt  
600  
  
tttacaagc accacccaac aacttctgct ttcttccta tcttttcaa gatttgctca  
660  
  
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720  
  
accctata gggggaaagag caagtcaaattt gagcatagtg gggaaagaaa aggaaatggc  
780  
  
ttataaaac atcttttact ttgttttgc tcaaagacca aactagaact taaaaagttc  
840  
  
aaataaga aagtatacat ttttgctgtt atttctcatc attttgtata tgggaggaaa  
900  
  
tataattt gcatgggtgt taggtgaact gttttcattt gcttgtgttc agatatcttgc  
1020  
  
agattgtt aacttcctat tgttagcaaca gggacaaata tatttgcattt tgctggcat  
1080

eolf-seql-S000001.txt  
:cgtaatca cttttcttag gggacagaat cccatcttt ccttcggcag attgcagccc  
1140  
:ttccccac aatgcatcca gaaatcgctg tgcattttg agggtagga gttcatttg  
1200  
:tcctcctg acttgttgct ccagctcctg aacagaaaact agttcaggg ctcttatagg  
1260  
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1320  
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1380  
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1560  
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1620  
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1980  
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2040  
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2160  
agatctgt ttcaaggaga tttactgcta ttttatttgg aagaagctgg caactggct

eolf-seql-S000001.txt  
2220  
jaccaaaaat agaaaaaaaaaaa aaaaaaaagtc cacaaattta atcacttgta gggAACCCat  
2280  
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2340  
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2400  
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2460  
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2520  
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2580  
:attcaaaa aggcatgcaa cacacctgga gcacaattcc actttcattc aactaattcc  
2640  
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2700  
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2760  
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2880  
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2940  
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3000  
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3060  
ggcttgaa acatattgga ttacatgctc acatttaaca aagagaggaa atgtgtttca  
3120  
ttctggag tggctggaat ttacaagcta attgttcaat aaatctactc aagatagtta  
3180  
taaggctt tgtggcaatg accttgaact gagagcctgt atctggattt agcacttgaa  
3240  
atctaact ggatattgg gttaaaagaa tcacatttat tccaaatcg gaatgcttg  
3300

## eolf-seql-S000001.txt

:tttcctgt cagttaattg ccagttgcc acaaatctag ttctatacag tttcttggga  
3360  
  
jatgataat aaacatttat tgagcaaaaa aaaaaaaaaa a  
3401  
  
?10> 64  
?11> 3454  
?12> DNA  
?13> Homo sapiens  
  
!00> 64  
jaaatgact gctgtccatg caggcaacat aaacttcaag tgggatccta aaagtctaga  
60  
  
!tcaggact ctggcagttg agagactgtt ggagcctctt gttacacagg ttacaaccct  
120  
  
jtaaacacc aatagtaaaag ggccctctaa taagaagaga ggtcggttcta agaaggccc  
180  
  
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240  
  
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300  
  
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360  
  
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420  
  
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540  
  
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600  
  
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720  
  
acaggcac ctgatataca agcagctgca gcaggcggtc acagggattt ccaatgcagc  
780  
  
aggccact gcctcagacg atgcctcaca gcaccagggt ggaggaggag gagaactggc  
840

## eolf-seql-S000001.txt

:atgcactc aataactttg acaaacaat cattgtggac cccttgagct tcagcgagga  
900

:gctttagg cttccctgg aggagcgtct ggaaagcatc attagtgggg ctgccttgat  
960

:ccgactcg tcctgcacgc gtgatgaccg tcgtgagcga attgtggcag agtgtaatgc  
1020

:tccgccag gcctgcagga cctgcgttc ggagtacatg ggcaatgctg gacgtaaaga  
1080

:gaagtgtat gcactcaatt ctgcaataga taaaatgacc aagaagacca gggacttgcg  
1140

:gacagctt cgcaaagctg tcatggacca cgtttcagat tcttcctgg aaaccaatgt  
1200

:cactttg gtattgattt aagctgcaaa gaatggaaat gagaaagaag ttaaggaata  
1260

:cccaagtt ttccgtgaac atgccaacaa attgattgag gttgccaact tggcctgttc  
1320

:tctcaaattt aatgaagaag gtgtaaagct tgttcgaatg tctgcaagcc agttagaagc  
1380

:gttgcctt caggttatta atgctgcaac ctgggctta gcacaaaaac cacagagtaa  
1440

:tggccaa gagaacatgg atcttttaa agaacaatgg gaaaaacaag tccgtgttct  
1500

:cagatgct gtcgatgaca ttacttccat tgatgacttc ttggctgtct cagagaatca  
1560

:tttggaa gatgtgaaca aatgtgtcat tgctctcaa gagaaggatg tggatggcct  
1620

:accgcaca gctggtgcaa ttcgaggccg ggcagcccg gtcattcacg tagtcaccc  
1680

:agatggac aactatgagc caggagtcta cacagagaag gttctggaag ccactaagct  
1740

:tctccaaac acagtcatgc cacgtttac tgagcaagta gaagcagccg tggaaaggccct  
1800

:gctcgac cctgcccagc ccatggatga gaatgagttt atcgatgctt cccgcctgg  
1860

:atgatggc atccggacca tcaggaaagc agtgctgatg ataaggaccc ctgaggagtt  
1920

eolf-seql-S000001.txt  
jatgactct gactttgaga cagaggattt tgatgtcaga agcgagacga gcgtccagac  
1980  
  
jaagacgat cagctgatag ctggccagag tgcccggcgc atcatggctc agttccccca  
2040  
  
jagcaaaaaa gcgaagattc gggAACAGGT ggccagcttc caggaagaaa agagcaagct  
2100  
  
jatgctgaa gtgtccaaat gggacgacag tggcaatgac atcattgtgc tggccaagca  
2160  
  
atgtgcatg attatgatgg agatgacaga ctttacccga ggtAAAGGAC cactcaaaaa  
2220  
  
acatcgat gtcatcagt ctgccaagaa aattgtgag gcaggatcca ggtggacaa  
2280  
  
ttggccgg accattcgag accattgccc cgactcggct tgcaagcagg acctgctggc  
2340  
  
acctgcaa cgcacatcgccc tctactgcc a ccagctgaac atctgcagca aggtcaaggc  
2400  
  
jaggtgcag aatctcgccg gggagcttgt tgtctctggg gtggacagcg ccatgtccct  
2460  
  
atccaggca gccaagaact tgatgaatgc tgtggtgca agatgaaagg catcctacgt  
2520  
  
ccctctacc aaataacaaa agtcacaggg tatggcttcc ctcaaccttc ctgctgtgtc  
2580  
  
itgaagatg aaggcacccag agaaaaagcc attggtaag agagagaaac aggatgagac  
2640  
  
agaccaag attaaacggg catctcagaa gaagcacgtg aacccagtgc aggcctcag  
2700  
  
tagttcaaa gctatggaca gcatctaagt ctgcccaggc cggccgcggc caccctctg  
2760  
  
tcctgaat atcagtcact gttcgtaact caaatgaatt tgctaaatac aacactgata  
2820  
  
agattcca cagggaaatg ggcagactga accagtccag gtggtaatt ttccaagaac  
2880  
  
agtttaag ttgattaaaa atgccttttag aatgcaggag cctacttcta gctgtatTTT  
2940  
  
gtatgctt aaataaaata aaattcataa ccaagagatc cacattagct tgtagtaat  
3000  
  
tctgacca agccgagatg ccattctttt agtgatggcgc gcgttagtt tgagagaagg

eolf-seql-S000001.txt  
3060  
:ttggctca acttcagttg agagggtgca gtccagacag cttgactgct tttaaatgac  
3120  
:aagatgac ctgtggtaag caacctggca tcttaggaag cagtccttga gaaggcatgt  
3180  
:cagaaagg tctctgagga caaactcact cagtaaaaca taatgtatca tgaagaaaac  
3240  
:attctcta tgacatgaaa tgaaaatttt aatgcattgt tataattact aatgtacgct  
3300  
:tgcaggac attaataaag ttgcttttt aggctacagt gtctcgatgc cataatcaga  
3360  
:acactttt tttcctcttt ctcccagctt caaatgcaca attcatcatt gggctcactt  
3420  
.aataactg cagtgtttcc gccttgcgtt gcag  
3454  
  
:10> 65  
:11> 1939  
:12> DNA  
:13> Homo sapiens  
  
00> 65  
tgaccatg tgttagcggag cgaggctggc cctgctggc tatggataa tcatgcacag  
60  
gctgtcac agtcacactg ccggccggcc actccggttc cccggatca ggccagagga  
120  
aggcgtac ggcgaggacg gaaacccgct gccagacttc ggtggctcgg agccgccccgg  
180  
cagggagc cccgcctccg cgccgcgcgc cgccgccgcc tggtaccgcc cggccggag  
240  
gagatgtc gcccacggga tccttaacga ggcctaccgc aaagtgcgtt accagctgtc  
300  
ccgggaag cacctgcagt cgctcggtgc ccggggcgtg ggtggagcc tcggcggcgg  
360  
cgggggac gacgcggagc cgctctccaa ggcgcactcg gacggatct tcacggacag  
420  
acagccgc taccggaaac aaatggctgt caagaaatac ttggcggccg tcctaggaa  
480  
ggtataaa caaagggtta aaaacaaagg acgccaata gcttatttgt agcgatgggt

## eolf-seql-S000001.txt

540

accagctac cctgtgtata cagccctgac gcaatgaaaa gtcgtttcc aaactgactc  
600

acagtcatc gctcgtgtgt tctatccaaa catgtattta tgtaatgaag taaagccatt  
660

atgaatat ttgataata atattgttt tcttctaca aagcactaga gaatgcacag  
720

tatactttg tggaccaatt attgatatat attataaata tatataaaga atatataat  
780

tatataatat ataaagtata gagagaagtt catacaaagc gtgcacaagg attgaaaatt  
840

ccccgagct gtttatgttt ttataaaaat aaatagaaaa gtagacaatc attgtttga  
900

attactcc tattttgtt aactggaatt aaaaggatag tattttatc catgacaggc  
960

gaagatat tactacttac cattgctac tgtacataaa caatgatgcc ctgctccagg  
1020

gattttga ggtaaagata tggagaattg ctgaaggca ttcttccca gtgagtctct  
1080

ggcaggct gcttcaatcc cagcctaact caactggct ctgtccccc ggttgggtgg  
1140

attccaat atttctgctt tcttgattc tcctttatg ttagttgtc tctttcaga  
1200

ctcagccc agaagaaaat tctcctgata aaacaacagc tcgatccaaa ttgtgcttct  
1260

ccagaatt cacgcctctc cctaggagaa gagttgagga actgtacaga aaaggcgcc  
1320

cgttagac cgctctctt tctgtacttc ctgagtggcc aggaaatcta atatccccaa  
1380

tagggcaa ttgaaacaaa gtgaaggaca tagaggtata ttgaaagagg cagagcctga  
1440

tggtagga ggacgaccct ggaaatggac tggttgaga ttgccccagg tctggaaagg  
1500

aggcaaa tccagtccca gtggcctga ctggggcgc tggtatgg aaatggatgc  
1560

agtacaat gtgttttct ccagtgctgt ccatgcttct catttgtga aatggccagg  
1620

## eolf-seql-S000001.txt

:cctccctt ttgaaacctg ctctgttagga gctacccttt tcctttgtgg ttttatggag  
1680

:ctctccctt cctaccctcc tgcaactgttt aagtactgtt taccattttt cattcacttc  
1740

:ttaaaacctt gtgaatgctt ctcactttt tttttgtttt atgcaggcac ttattgtaaa  
1800

:ttagaaac ccctctgttag ccactagtaa gtaattatgc actaaatatcg aaccctttgt  
1860

:cttggttta ttgagtttgt aggtaaaatg tattttcta cattattgct tattgcttag  
1920

:aaattttat ttcataaaaa  
1939

:10> 66  
:11> 2193  
:12> DNA  
:13> Homo sapiens

:00> 66  
:cacgaggc gggggcggtg catgacgcgc ctcggggcg gtcctcgggc ggcacccgct  
60

:cttacact cgggcctcag aagtccgtgc cagtgaccgg agcggcggcg gcgagcgggtt  
120

:ttgtgggc tagaagaatc ctgaaaaat gtctcttat ccattctcg aagacttcaa  
180

:tagacaaa gtaattcagg ctcaaactgc ttttctgca aaccctgcca atccagcaat  
240

:tgtcagaa gcttctgctc ctatccctca cgatggaaat ctctatccca gactgtatcc  
300

:agctctct caatacatgg ggctgagttt aaatgaagaa gaaatacgtg caagtgtggc  
360

:tggtttct ggtgcaccac ttcagggca gttggtagca agaccttcca gtataaacta  
420

:tggtggtt cctgttaactg gtaatgtatgt tggaattcgt agagcagaaa ttaagcaagg  
480

:ttcgtgaa gtcattttgt gtaaggatca agatggaaaa attggactca ggcttaaatc  
540

:tagataat ggtatatttg ttcaagctgtt ccaggctaat tctccagcct cattgggttgg  
600

## eolf-seql-S000001.txt

:tgagattt ggggaccaag tacttcagat caatggtgaa aactgtgcag gatggagctc  
660  
rataaagcg cacaagggtgc tcaaaccaggc ttttggagag aagattacca tgaccattcg  
720  
racaggccc tttgaacgga cgattaccat gcataaggat agcactggac atgttggttt  
780  
.tctttaaa aatggaaaaaa taacatccat agtgaaagat agctctgcag ccagaaatgg  
840  
.ttctcacg gaacataaca tctgtgaaat caatggacag aatgtcattt gattgaagga  
900  
ctcaaatt gcagacatac tgtcaacatc tgggactgta gttactatta caatcatgcc  
960  
.cttttatac tttgaacata ttattaagcg gatggcacca agcattatga aaagcctaatt  
1020  
accacacc attcctgagg tttaaaattc acggcaccat ggaaatgtag ctgaacgtct  
1080  
agtttcct tctttggcaa cttctgtatt atgcacgtga agccttcccg gagccagcga  
1140  
atatgctg catgaggacc tttctatctt acattatggc tggggatctt actctttcat  
1200  
gatacctt gttcagatt caaaatagtt gtgccttat cctggttta cagatgtgaa  
1260  
ttcaagag atttactgac tttccctagaa tagtttctct actggaaacc tgatgcttt  
1320  
aagccatt gtgatttagga tgactgttac aggcttagct ttgtgtgaaa accagtcacc  
1380  
tctcctag gtaatgagta gtgctgtcat attacttttgc ttctatagca tacttgcatc  
1440  
taacatgc tatcatagta catttagaat gattgccttt gatTTTTTttttaattct  
1500  
gtgtgtgt gtgtaaaatg ccaattaaga acactggttt cattccatgt aagcattaaa  
1560  
gtgtatgt aggtttcaag agattgtgat gattcttaaa tttaactac cttcacttaa  
1620  
tgcttgaa ctgtcgccctt aactatgtt a gcatctaga ctaaaagcca aaatataatt  
1680

eolf-seql-S000001.txt  
:tgctgcct ttctaaaaac ccaaaatgta gttcttattt aacctgaaat gtacactagc  
1740  
:agaacagt ttaatggtac ttactgagct atagcatagc tgcttagttg ttttgagat  
1800  
:tttagtca acacataatg gaaacttctt tcttctaaaa gttgccagtg ccactttaa  
1860  
:agtgaatc actatatgtg atgtaaaagt tattacacta aacaggataa acttttgact  
1920  
:ccctttgt tcatttggat attaagtggt ataatactta attttggcat ttgactctta  
1980  
:attatgtt accttagctac tttggatgg tcttagaata ttttctgat aacttgttcc  
2040  
.ttcctgac tcctccttgc aaacaaaatg atagttgaca ctttatcctg attttttct  
2100  
tttttgtt ttatgtctat tctaattaaa tatgtataaa taaagttaca ttttagtctg  
2160  
aaaaaaaaaaa aaaaaaaaaaaa aaaaaaaaaaaa aaa  
2193

10> 67  
11> 5189  
12> DNA  
13> Homo sapiens  
  
00> 67  
ggccaagt cgggtggctg cggcgccggaa gccggcgtgg gcggcggcaa cggggcactg  
60  
ctgggtga acaatgctgc aaaaaaaagaa gagtcagaaa ctgccaacaa aaatgattct  
120  
aaagaagt tgtctgttga gagagtgtat cagaagaaga cacaacttga acacattctt  
180  
tcgtcctg atacatatat tgggtcagtg gagccattga cgcagttcat gtgggtgtat  
240  
tgaagatg taggaatgaa ttgcagggag gttacccttg tgccaggttt atacaagatc  
300  
tgatgaaa ttttggtaa tgctgctgac aataaacaga gggataagaa catgacttgt  
360  
taaagttt ctattgatcc tgaatctaac attataagca tttggaataa tggaaaggc  
420

eolf-seql-S000001.txt  
tccagtag tagaacacaaa ggtagagaaa gtttatgttc ctgcttaat tttggacag  
480  
ttAACAT ccagtaacta tgatgatgat gagaaaaaaag ttacaggtgg tcgtaatgg  
540  
tgttgcaa aactttgtaa tattttcagt acaaagttt cagtagaaac agcttgcaaa  
600  
atacaaac acagttttaa gcagacatgg atgaataata tgatgaagac ttctgaagcc  
660  
aattaaac attttgatgg tgaagattac acatgcataa cattccaacc agatctgtcc  
720  
atTTAAGA tgaaaaaact tgacaaggat attgtggccc tcatgactag aagggcatat  
780  
tttggctg gttcgtgttag aggggtcaag gtcatgtta atggaaagaa attgcctgta  
840  
tggatttc gcagttatgt agatcttat gtgaaagaca aattggatga aactggggtg  
900  
cctgaaag ttattcatga gcttgcaaattt gaaagatggg atgtttgtct cacattgagt  
960  
aaaaggat tccagcaaattt cagcttggta aatagtattt caactacaaa aggtggacgg  
1020  
cgtggatt atgtggtaga tcaagttgtt ggtttactga ttgaagttagt taagaaaaag  
1080  
caaagctg gtgtatcagt gaaaccattt caagaaaaaa accatatatg gtttttatt  
1140  
ttgcctta ttgaaaatcc aactttttagt tctcagacta aggaaaacat gactctgcag  
1200  
caaaagtt ttgggtctaa atgccagctg tcagaaaaat ttttaaagc agcctctaatt  
1260  
tggcattt tagaaagtat cctgaactgg gtgaaatttta aggctcagac tcagctgaat  
1320  
gaagtgtt catcagtaaa atacagtaaa atcaaaggta ttcccaaact ggatgatgct  
1380  
tgatgctg gtggtaaaca ttccctggag tgtacactga tattaacaga gggagactct  
1440  
caaatcac tggctgtgtc tggatttaggt gtgattggac gagacagata cggagtttt  
1500  
actcaggg gcaaaattct taatgtacgg gaagcttctc ataaacagat catggaaaat

## eolf-seql-S000001.txt

1560

:tgaataaa ataataattat taaaatagtt ggtctacaat ataagaaaag ttacgatgtat  
1620

:agaatctc tgaaaacctt acgctatgga aagattatga ttatgaccga tcaggatcaa  
1680

:tggttctc acataaaaagg cctgcttatt aatttcattcc atcacaattt gccatcactt  
1740

gaagcatg gttttcttga agagttcatt actcctattt taaaggcaag caaaaataag  
1800

:gaaacttt ctttctacag tattcctgaa tttgacgaat ggaaaaaaca tatagaaaac  
1860

gaaaggct ggaaaataaa gtactataaa ggattggta ctgtacagc taaagaagca  
1920

ggaatatt ttgctgatatt gaaaggcat cgcatcttgtt ttagatatgc tggcctgaa  
1980

tgtgctg ccattacctt ggcatttagt aagaagaaga ttgatgacag aaaagaatgg  
2040

aacaaatt ttatgaaaga ccggagacag cgtaggctac atggcttacc agagcaattt  
2100

atatggta ctgcaacaaa gcatttgact tataatgatt tcatcaacaa ggaattgatt  
2160

cttctcaa actcagacaa tgaaagatct ataccatctc ttgttgatgg cttaaacct  
2220

ccagcggaa aagttttatt tacctgtttc aagaggaatg ataaacgtga agtaaaagtt  
2280

ccagttgg ctggctctgt tgctgagatg tcggcttatac atcatggaga acaagcattt  
2340

gatgacta ttgtgaattt ggctcagaac tttgtggaa gtaacaacat taacttgctt  
2400

gcctattt gtcagttgg aactcggtt catggggca aagatgctgc aagccctcg  
2460

tattttca caatgttaag cacttagca aggctacttt ttcctgctgt ggatgacaac  
2520

ccttaagt tccttatga tgataatcaa cgtgttagac ctgagtggta tattcctata  
2580

tcccatgg tttaataaa tggtgctgag ggcattggta ctggatggc ttgtaaacta  
2640

## eolf-seql-S000001.txt

:caactatg atgctaggga aattgtgaac aatgtcagac gaatgctaga tggcctggat  
2700

:tcatccca tgcttccaaa ctacaaaaac tttaaaggca cgattcaaga acttggtcaa  
2760

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2820

.gcttccag tttagaacttg gacacaggta tataaagaac aggttttaga acctatgcta  
2880

tggaacag ataaaacacc agcattaatt tctgattata aagaatatca tactgacaca  
2940

tgtgaard ttgtggtgaa aatgactgaa gagaaactag cacaaggcaga agctgctgga  
3000

gcataaag ttttaaact tcaaactact cttacttgtt attccatggt acttttgat  
3060

tatggat gtctgaagaa atatgaaact gtgcaagaca ttctgaaaga atttttgat  
3120

acgattaa gttattacgg tttacgtaag gagtggcttg tggaatgtt gggagcagaa  
3180

tacaaagc ttaacaatca agccgttcc attttagaga agatacaagg gaaaattact  
3240

agagaata ggtcaaagaa agatttgatt caaatgttag tccagagagg ttatgaatct  
3300

cccagtga aagcctggaa agaagcacaa gaaaaggcag cagaagagga tgaaacacaa  
3360

ccagcatg atgatagttc ctccgattca ggaactcctt caggcccaga ttttaattat  
3420

tttaaata tgtctctgtg gtctcttact aaagaaaaag ttgaagaact gattaaacag  
3480

agatgcaa aaggcgaga ggtcaatgat cttaaaagaa aatctccttc agatcttgg  
3540

agaggatt tagcggcatt tggtgaagaa ctggataaag tggaatctca agaacgagaa  
3600

tgttctgg ctggaatgtc tggaaaagca attaaaggta aagttggcaa acctaaggta  
3660

jaaactcc agttggaaga gacaatgcc tcacacctatg gcagaagaat aattcctgaa  
3720

eolf-seql-S000001.txt  
: tacagcta tgaaggcaga tgccagcaaa aagttgctga agaagaagaa gggtgatctt  
3780  
  
: tactgcag cagtaaaaagt ggaatttgat gaagaattca gtggagcacc agtagaaaggt  
3840  
  
: aggagaag aggcattgac tccatcagtt cctataaaata aaggtcccaa acctaagagg  
3900  
  
: gaagaagg agcctggcac cagagtgaga aaaacaccta catcatctgg taaacctagt  
3960  
  
: aaagaaag tgaagaaacg gaatccttgg tcagatgatg aatccaagtc agaaagtgtat  
4020  
  
: ggaagaaa cagaacctgt ggttattcca agagattctt tgcttaggag agcagcagcc  
4080  
  
: aagaccta aatacacatt tgatttctca gaagaagagg atgatgatgc tcatgtatgat  
4140  
  
: tgatgaca ataatgatt agaggaattt aagttaaag catctccat aacaaatgtat  
4200  
  
: ggaagatg aatttgttcc ttcagatggg ttagataaag atgaatatac atttcacca  
4260  
  
: caaatcaa aagccactcc agaaaaatct ttgcatacata aaaaaagtca ggattttgga  
4320  
  
: tctcttct catttccttc atattctcag aagtcagaag atgattcagc taaatttgac  
4380  
  
: taatgaag aagattctgc ttctgtttt tcaccatcat ttggctgaa acagacagat  
4440  
  
: agttccaa gtaaaaacggt agctgctaaa aaggaaaaac cgtttcaga tacagtcct  
4500  
  
: gcccaaga gagccccaaa acagaagaaa gtagtagagg ctgtaaactc tgactcgat  
4560  
  
: agaatttg gcattccaaa gaagactaca acacccaaag gtaaaggccg aggggcaaag  
4620  
  
: aaggaaaag catctggctc tgaaaatgaa ggcgattata accctggcag gaaaacatcc  
4680  
  
: aacaacaa gcaagaaacc gaagaagaca tctttgatc aggattcaga tgtggacatc  
4740  
  
: cccctcag acttcctac tgagccacct tctctgccac gaaccggcgtcg ggcttaggaaa  
4800  
  
: agtaaaaat atttgcaga gtctgatgaa gaagaagatg atgttgattt tgcaatgttt

## eolf-seql-S000001.txt

4860

ttaagtgc ccaaagagca caaacatttt tcaacaaata tcttgtgttgc tcctttgtc  
4920

ctctgtct cagacttttgc tacatctggc ttatTTAAT gtgatgtatgt aattgacggt  
4980

tttattat tgtggtaggc ctTTAACAT tttgttctta cacatacagt tttatgctct  
5040

tttactca ttgaaatgtc acgtactgtc tgattggcTT gttagaatgt tataGACTGC  
5100

tgcattag cacagatttt aattgtcatg gttacAAact acagacctgc ttttgaaat  
5160

aatttaaa cattaaaaat ggaactgtg  
5189

10> 68  
11> 2836  
12> DNA  
13> Homo sapiens

00> 68  
ccctcAGC gtccggccGA ggCGCggTGT atgctgAGCC gCTGCCGcAG cGGGCTGcTC  
60

cgtcctgg gccttagctt cctgctgcAG acccgccggc cgattctcCT ctgctctcca  
120

tctcatga agccgctggT cgtgttcgtc ctcggcggc ccggcgcgg caaggggacc  
180

gtgcGCCc gcATCGTCGA gaaatatggc tacacacacc tttctgcagg agagctgctt  
240

tgtgaaa ggaagaaccc agattcacAG tatggtaAC tattgaaaa gtacattaaa  
300

aggaaaga ttgtaccAGT tgagataACC atcAGTTTAT taaAGAGGGA aatggatcaG  
360

aatggctg ccaatgctca gaagaataaa ttcttgATTG atgggtttcc aagaaatcaa  
420

caaccttc aaggatggaa caagaccatg gatggGAAGG cagatgtatc tttcgTTCTC  
480

:tttgact gtaataatga gatttgtatt gaacgatgtc ttgagagggg aaagagtagt  
540

:aggagtG atgacaacAG agagAGCTTg gaaaAGAGAA ttcAGACCTA CCTTCAGTCA

eolf-seql-S000001.txt

600  
aaagccaa ttattgactt atatgaagaa atggggaaag tcaagaaaaat agatgcttct  
660  
.atctgttg atgaagttt tgatgaagtt gtgcagattt ttgacaagga aggctaattc  
720  
.aacctgaa agcatccttg aaatcatgct tgaatattgc tttgatacgct gctatcatga  
780  
.cctttta aggcaattct aatcttcat aactacatct caattagtgg ctggaaagta  
840  
tggtaaaa caaagtaaat tttttatgt tcttttttg gtcacaggag tagacagtga  
900  
tcaggttt aacttcacct tagttatggt gctcacccaaa cgaagggtat cagctattt  
960  
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1020  
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1080  
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1140  
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1200  
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1260  
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1320  
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1380  
ctgacata atctaagggt atggggcaag gatcacatct aatgcttgc tccttataact  
1440  
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1500  
gaaatgca tgtggctaga tttatgctaa aatgattctc agttagcatt ttagtaacac  
1560  
caaagggtt ttttttggg tgtttctag acttaataaa agcttaggat taattagaag  
1620  
gcaatcta gttaaatttc ccattgtat tttatcttct tgaatacttt tttcatagtt  
1680

eolf-seql-s000001.txt

ttgtttaa aaagatttaa aaatcattgc actttggta gaaaaataat aaatatatct  
1740  
  
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1800  
  
tgaagcac cgaaagataa atgattttta aaaggctata gagtccaaag gaatattctt  
1860  
  
acaccaat tcttccttta aaaatctctg aggaatttgt ttgcgcctt ctttttttc  
1920  
  
ctgtcaca atgctaagtgt gtatccgagg ttcttaatat gagatttaaa atcttaaaaat  
1980  
  
ttcttatt ttcagcactt acatcatttg gtacacaggg tcaaataggg caaataattt  
2040  
  
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2100  
  
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2160  
  
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2220  
  
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2280  
  
gtgttgca ggccagcaaa tacagaggtg gtttaatcaa acagctctag tatgaagcaa  
2340  
  
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2400  
  
gaatctaa atatttatacg tgagattgtg aaagcaacct taaagtttg aagaagactg  
2460  
  
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2520  
  
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2580  
  
aaaacatg ttggcaacat tgagtttg agttgattga gataatatga cttaactagt  
2640  
  
tgtcattc catttggtaa agatacagtc accaagaatg tttgagttt tttgaaagac  
2700  
  
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2760

eolf-seql-S000001.txt  
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2820  
.aaaaaaaaaaaaaaa  
2836  
  
10> 69  
11> 1500  
12> DNA  
13> Homo sapiens  
  
00> 69  
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60  
  
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120  
  
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180  
  
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240  
  
ctgaccac actcacccca gacactggcc gtatcctgtc caagctacat actgtccaac  
300  
  
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360  
  
caaggcAA gaatcacaag atgcgcata ttgccttgc gggaaagccca gtggaggaca  
420  
  
gagaagga tctggtgaaa ctggctaaac gcctcaagaa ggagaaagta aatgttgaca  
480  
  
atcaattt tggggaaagag gaggtgaaca cagaaaagct gacagccccc gtaaacacgt  
540  
  
aatggcAA agatggaacc gtttctcatc tggtgacagt gcctcctggg cccagttgg  
600  
  
gatgtct catcagttct ccgattttgg ctggtgaaagg tggtgccatg ctgggtcttg  
660  
  
gccagtga ctggaaattt ggagtagatc ccagtgctga tcctgagctg gcctggccc  
720  
  
cgtgtatc tatggaaagag cagcggcagc ggcaggagga ggaggcccg cggcagctg  
780  
  
gcttctgc tgctgaggcc gggattgcta cgactggac tgaaggtgaa agaggtggaa  
840

eolf-seql-S000001.txt  
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1020  
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1080  
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1140  
cagggagc agagttggc cagcggaat cagcagacat tcatgccagc tcagctatgg  
1200  
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1260  
cagagtgt cctagagaac .ctcccaggtg tggatcccaa caatgaagcc attcgaaatg ...  
1320  
atgggctc cctggcctcc caggccacca aggacggcaa gaaggacaag aaggaggaag  
1380  
aagaagtg agactggagg gaaagggtag ctgagtctgc ttagggact gcatggaaag  
1440  
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1500  
  
10> 70  
11> 895  
12> DNA  
13> Homo sapiens  
  
00> 70  
catcttgc gtccccgcgt gtgtgcgcct aatctcaggt ggtccacccg agaccccttg  
60  
  
caccaacc ctagtccccc gcgcggcccc ttattcgctc cgacaagatg aaagaaacaa  
120  
  
atgaacca gaaaaaactc gccaaactgc aggcacaagt ggcgcatttgtt gggaaaggaa  
180  
  
gctcgcag aaagaagaag gtggttcata gaacagccac agcagatgac aaaaaacttc  
240  
  
:tctcctt aaagaagtta gggtaaaca atatctctgg tattgaagag gtgaatatgt  
300

eolf-seql-S000001.txt  
:acaacacca aggaacagtg atccacttta acaaccctaa agttcaggca tctctggcag  
360  
:aacacttt caccattaca ggccatgctg agacaaagca gctgacagaa atgctaccca  
420  
:atcttaaa ccagcttggc gcggatagtc tgacttagtt aaggagactg gccgaagctc  
480  
:cccaaaca atctgtggat ggaaaagcac cacttgctac tggagaggat gatgatgatg  
540  
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600  
:tcaacttc tgaagataaa acctgaagaa gttactggga gctgctattt tatattatga  
660  
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720  
.cccaagcc ccttggacac tgcaagctttt ttcaagttttt gcttatacac aattcattct  
780  
gcagctaa ttaagccgaa gaagcctggg aatcaagttt gaaacaaaga ttaataaaagt  
840  
tttgccctaa gtaaaaaaaaaaaaaaa aaaaataaaaaaaa aaaaaaaaaaaa aaaaa  
895

10> 71  
11> 1777  
12> DNA  
13> Homo sapiens

00> 71  
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60  
cagctacc cgccattcg tccgagtttg cgactcgcgg gaccggcgta cccggcgca  
120  
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180  
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240  
cagaggtg tatgtgccca cagtgttga gaactatgtg gcagatatcg aggtggatgg  
300  
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360

eolf-seql-S000001.txt  
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480  
ccatcatc ctggttggga ataagaagga tcttcggaat gatgagcaca caaggcggga  
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720  
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780  
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840  
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900  
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960  
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1020  
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1080  
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1140  
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1200  
aaaagccc aagttcatgc agctgtggca gagttacagt tctgtggtt catgttagtt  
1260  
cttatagt tactgtgtaa ttagtgccac ttaatgtatg ttacaaaaaa taaatatatc  
1320  
cccagact agatgttagta ttttgtataa ttggattcta atactgtcat ctcaagaagt  
1380  
atggttta aagaagtgtta ttggaaataa agtcagatgg aaattcattt taaattcccg  
1440  
gtcactt ttctgataaa agatggccat attaccctt ttcggccccca tgtatctcag

eolf-seql-s000001.txt  
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1560  
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1620  
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1680  
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1740  
actactaa tagaataaaag gcagtttct aaaaaaaa  
1777  
  
10> 72  
11> 1336  
12> DNA  
13> Homo sapiens  
  
00> 72  
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180  
  
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300  
  
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360  
  
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420  
  
gctcaatc tggtgcagag aaatgttaat gtcttcaaatt tcattattcc tcagatcgtc  
480  
  
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540  
  
tacctgga aactaagtgg attacccaaa caccgcgtga ttggaagtgg atgtaatctg  
600  
  
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## eolf-seql-S000001.txt

660

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720

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780

tttggagg aagtgcataa gatggtggtt gaaagtgcct atgaagtcat caagctaaaa  
840

atataccca actgggctat tggattaagt gtggctgatc ttattgaatc catgttgaaa  
900

tctatcca ggattcatcc cgtgtcaaca atggtaaagg ggtatgtatgg cattgagaat  
960

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1020

gaagctaa aggatgatga gtttgctcag ctcaagaaaa gtgcagatac cctgtggac  
1080

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1140

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1200

atcttctt caatatgtga atttgggctc acagaatcaa agcctatgct tggttaatg  
1260

tgcaatct gagctcttga acaaataaaa ttaactattt tagtgcgaaa aaaaaaaaaa  
1320

aaaaaaaa aaaaaa  
1336

10> 73

11> 1414

12> DNA

13> Homo sapiens

00> 73

ctctgccc gcccccagcc ctcgccccac cctcggcgcc cgcacatctg cctgctcagc  
60

cagacggc gcccgaccc cggggcgccg gatccagcca ggtgggagcc ccgcagatga  
120

tctctgaa ggtgtgcctg aaccagtgcc agcctgcctt gtctgcagca tcggcctgat  
180

gtgggtga ctgatccctc agggctccgg agccatgtgg cccaacggca gttccctggg

eolf-seql-s000001.txt  
240

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300

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360

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420

tcgtcctc accgacttcc tggggctgct ggtgaccggc accatcgtag tgccccagca  
480

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540

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600

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660

ggccacc ctggggctgg tgtggcgcc cgcgctggcg ctgggcctgc tgccctgat  
720

gcgtgggt cgctacaccc tgcaatacccg ggggtcctgg tgcttcctga cgctggcg  
780

agtccggg gacgtggcct tcgggctgct cttctccatg ctggcgcc tctcggtcgg  
840

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900

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960

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1020

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1080

cgctcatc tactgctcg tggccacctg gaaccagatc ctggaccctt gggtgtatat  
1140

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1200

cgccctc cagccccagc tcacgcagcg ctccggcgt cagtaggaag tggacagagc  
1260

ccctcccg cgccttccg cggagccctt ggcccctcgg acagccatc tgcctgttct  
1320

## eolf-seql-S000001.txt

!ggattcag gggctgggg tgctggatgg acagtggca tcagcagcag ggtttgggt  
1380

!accccaat ccaacccggg gacccccaac tcct  
1414

:10> 74  
:11> 3080  
:12> DNA  
:13> Homo sapiens

:00> 74  
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60

:tgtatgg gagctccgga agctgccggc gactctcccc tggagcagcg tgactgacac  
120

:gctccatat tcagctggga ggagggagag gggaggagaa ggggagggcc gcgggaggag  
180

:tacgagtg gccgaccacg gattgcatt gccgaggacg ggaccccagg gcagcgaagc  
240

:aatggcca acatgcaggg actggtggaa agactggaac gagctgtcag ccgcctggag  
300

:gctgtctg cagagtccca caggccccct gggactgcg gggaaatcaa tgggtgtcatt  
360

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420

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480

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540

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600

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660

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720

:tgacgctg ccaccttta cactaacagg gtcttaaagg actacaaaca cagtgatttg  
780

:tcatgtgg attgggtgaa gtcataattg aacatttgaa gtgaacttca agcatacata  
840

## eolf-seql-S000001.txt

ggaacacc acaccacggg cctcacatgg agcaaaacag gtcctgttagc atccacagta  
900

agcgttt ctgtcctctc ctctgggcct ggccttcctc cacccttcctcc tcctctgcct  
960

tccagggc cacctccact tttcgagaat gaaggcaaaa aagaggaatc ttctccttca  
1020

ctcagctt tatttgccca acttaaccag ggagaagcaa ttacaaaagg gctccgccc  
1080

cacagatg accagaagac atacaaaaat cccagcctgc gggctcaagg agggcaaact  
1140

atctccca ccaaaagtca cactccaagt cccacatctc ctaaatctta tccttctcaa  
1200

acatgccc cagtgttggc gttggaaagga aagaaatggc gagtggagta ccaagaggac  
1260

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1320

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1380

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1500

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1560

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1740

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1800

ctatagat acagcactgt ttctggcactg cctcgtggc attttgaat atttaacgtt  
1860

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1920

eolf-seql-S000001.txt  
tttaaagg aaaaaaaaaaa agaattctgt tcccctcata tcataacac agtaactgat  
1980  
  
tgtaaaaag actgcataat tcactttac acttatattt cattgctagt taaaaaataa  
2040  
  
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2160  
  
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2280  
  
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2340  
  
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2400  
  
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2460  
  
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2520  
  
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2580  
  
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2700  
  
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2760  
  
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2820  
  
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2880  
  
tcaaatta ttaatgctca tgtaccaagg ttttgctata aaagtttgt ctgtatgaat  
2940  
  
tgtggctt tagtaaataa tcattttca actgtaaact tattctgaaa taaagtaaaa  
3000  
  
staattgt ttaaataactg tgatgaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa

eolf-seql-s000001.txt

3060  
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3080

10> 75  
11> 2181  
12> DNA  
13> Homo sapiens

00> 75  
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60

ctgcgttg agagccagcg ggccagcgcc agcctaaca gccgccagaa gtacacgagg  
120

ccggccggc ggcgtgtgcg tgttaggcccgttgtgcggcggcggaggagcgcgg  
180

cggcagcc ggctggggcg ggtggcatca tggacgagaa ggtgttacc aaggagctgg  
240

cagtggat cgagcagctg aacgagtgc a cagactgtc cagatcccag gtaaagagcc  
300

tgcgagaa ggctaaagaa atcctgacaa aagaatccaa cgtgcaagag gttcgatgtc  
360

tttactgt ctgtggagat gtgcattggc aatttcatga tctcatggaa ctgttttagaa  
420

ggtggcaa atcaccagat acaaattact tgtttatggg agattatgtt gacagaggat  
480

tattcagt taaaacagtt acactgcttg tagctctaa gttcgttac cgtgaacgca  
540

accattct tcgaggaaat catgagagca gacagatcac acaagtttat gtttctatg  
600

aatgttt aagaaaatat ggaaatgcaa atgtttggaa atatttaca gattttttg  
660

tatcttcc tctcaactgcc ttgggtggatg ggcagatctt ctgtctacat ggtggctct  
720

ccatctat agatacactg gatcatatca gagcacttga tcgcctacaa gaagttcccc  
780

gggggtcc aatgtgtgac ttgctgtggc cagatccaga tgaccgtggc ggttgggt  
840

:ctcctcg aggagctggc tacaccccttgc ggcaagatat ttctgagaca tttaatcatg

900 eolf-seql-S000001.txt  
960 caatggcct cacgttggtg tctagagctc accagctgt gatggaggga tataactgg  
1020 ccatgaccg gaatgttagta acgattttca gtgctccaaa ctattgttat cgttgtggta  
1080 ccaagctgc aatcatggaa cttagacgata ctctaaaata ctctttcttg cagtttgacc  
1140 agcacctcg tagaggcgag ccacatgtta ctgcgtcgtac cccagactac ttccctgttaat  
1200 aaattttaa acttgtacag tattgccatg aaccatatacg cgacctaattg gaaatggaa  
1260 agcaacagt aactccaaag tgtcagaaaa tagttaacat tcaaaaaact tgtttcaca  
1320 gagccaaaa gatgtgccccat ataaaaatac aaagcctctt gtcataaca gccgtgacca  
1380 tttagaatg aaccagttca ttgcattgtg aagcgacatt gttggtaag aaaccagtt  
1440 ggcatagc gctatttgc gttacttttgc ctttctctga gagactgcag ataataagat  
1500 aaacatta acacccgtg aatacaattt aacttccatt tagctatagc tttactcagc  
1560 gactgttag ataaggatag cagcaaacaa tcattggagc ttaatgaaca tttttaaaaaa  
1620 attaccaa ggcctccctt ctacttgc gttttgaaat tgttctttt attttcaggg  
1680 accgttta atttaattat atgatttgc tgcactcagt ttattcccta ctcaaattctc  
1740 ccccatgt tgttctttgt tattgtcaga acctggtagt ttgtttgaa cagaactgtt  
1800 tccccctt cctgttaagac gatgtgactg cacaagagca ctgcagtgtt tttcataata  
1860 ttgtgaa ctaagaactg agaaggtaaa attttaatttgc tatcaatggg caagactgg  
1920 gtttatt aaaaaagtta aatcaatttgc gtaaatttttgc gatattgttagt acttgttaggt  
1980 ataaaaa tcaagggcac tacataacct ctctggtaac tccttgacat tcttcagatt

## eolf-seql-S000001.txt

!cttcagga tttatTTgtA tttcacatAT tacaatttGT cacattGTTg gtgtgcactt  
2040

!tgggttct tcctgcataT taacttGTTt gtaagaagg aaatctgtc tgcttcagta  
2100

!acttaatt gtaaaaccat ataacttgag atttaagtct ttgggttgtG ttttaataaa  
2160

:agcatgtt ttcaGGtaga g  
2181

10> 76  
11> 1315  
12> DNA  
13> Homo sapiens

00> 76  
cttccgtc cagaccggaa cccaagatgg ctgcgtgtt gctgagacac gttggtcgtc  
60

tgcctccg agcccactt agccctcagc tctgtatcag aaatgctgtt ccttggaa  
120

acggccaa agaagagatg gagcggttct ggaataagaa tataggttca aaccgtcctc  
180

tctccccca cattactatc tacagtttgtt ctctccat ggcgtatgtcc atctgccacc  
240

ggcactgg tattgctttg agtgcagggg tctctcttt tggcatgtcg gccctgttac  
300

cctggaa ctTGAGTCT tatttggAAC ttgtGAAGTC CCTGTGTCTG gggccagcac  
360

atccacac agctaagttt gcacttgtct tccctctcat gtatcataacc tggaatggga  
420

cgacactt gatgtggac ctagggaaag gcctgaagat tccccagcta taccagtctg  
480

gtgggtgt cctgggttctt actgtgtgtt cctctatggg gctggcagcc atgtgaagaa  
540

gaggctcc cagcatcatc ttcctacaca ttattacatt cacccatctt tctgtttgtc  
600

tcttatct ccagcctggg aaaagttctc cttatttGTT tagatccttt tgtatTTca  
660

tctcccttg gagcagtaga gtacctggta gaccataata gtggaaaagg gtctagttt  
720

## eolf-seql-S000001.txt

:ccttgttt ctaaagatga ggtggctgca aaaactcccc tttttgcc acagcttgcc  
780  
.ctctcgcc ctagaaggcag ttattctctc tccataattgg gctttgattt gtgctgaggg  
840  
.agcttttg gctccttctt cctgagacag tggaaacaat gccagctctg tggcttctgc  
900  
.tgggatg ggccgggttg ggggtgggt tgggtgaagc tttgggttgc cactgcctgt  
960  
.gtttgctg gcttaaagga caattctctt tcatttgta gagcccaggc cattaacaac  
1020  
.acacagtg ttattgaaag aagagaggtg ggggtggagg ggaatttagtc tgtcccagct  
1080  
.agggagat aaagagggct agttagttct tggagcagct gctttgagg agaaaatata  
1140  
.gctttgga cacgaggaag atctagaaaa ttatcattga acatattaat gtttatttct  
1200  
.ttcttgga tttccagaaa agcctcttaa ttttatgctt tctcatcgaa gtaatgtacc  
1260  
.tttttct gaaactgaat taaatactca ttttaaaaaa aaaaaaaaaa aaaaa  
1315

10> 77  
11> 1249  
12> DNA  
13> Homo sapiens

00> 77  
cacgagcc agggtttcct cttcaagtag gtctaaaaca tttttttct cattgacttc  
60  
  
tcctgttc taactgccag tactcagaag tcagagttga gagacagagg caccggac  
120  
  
agacgtga agcactgaat aaatagatca gaatgactga aaaagccccca gagccacatg  
180  
  
gaggagga tgacgatgat gagctggaca gcaagctcaa ttataaggct ccaccacaga  
240  
  
tccctgaa agagctgcag gaaatggaca aagatgatga gagtctaatt aagtacaaga  
300  
  
acgctgct gggagatggt cctgtggta cagatccgaa agcccccaat gtcgttgtca  
360

## eolf-seql-S000001.txt

:cggttcac cctggtttgt gagagtgcc cgggaccaat caccatggac cttaactggag  
420  
.ctggaagc cctaaaaag gaaaccattt tgtaaagga agttctgaa tatagagtca  
480  
.attcaattt caaatgttac agggatattt tgtcaggcct gaaaatacgtt cagcacaccc  
540  
.aggactgg ggtgaaagtg gataaagcaa catttatggt tggcagctat ggacctcggc  
600  
gaggagta ttagttccctc actccagttt aggaggctcc caagggcatg ctggcccgag  
660  
.acgtacca caacaagtcc ttcttcaccc acgttgcacaa gcaagaccac ctcagctggg  
720  
tggAACCT gtcgattaag aaggagtggc cagaatgaat gcatccaccc cgTTCCCCAC  
780  
ttGCCACC tggaaagaatt ctctcaggcg tgTTcagcac CCTGTCCTC CTCCCTGTCC  
840  
agctgggt cccttttcaa cactgccaca tttccttatt gatcgatctt ttcccaccc  
900  
cactcaac gtggcccta gaacaagagg cttaaaaccg ggcttcacc caacctgctc  
960  
tctgatcc tccatcaggg ccagatcttc cacgttcca tctcagtaca caatcattta  
1020  
atttccct gtcttacccc tattcaagca actagaggcc agaaaatggg caaattatca  
1080  
aacaggc ttgtactca gttccagtag ttcattctaa tgccttagatt ctTTTGTGGT  
1140  
ttgctggc ccaatgagtc cctagtcaca tcccctgcca gagggagttc ttctttgtg  
1200  
agacactg taaacgacac aagagaacaa gaataaaaca ataactgtg  
1249  
  
10> 78  
11> 1890  
12> DNA  
13> Homo sapiens  
  
00> 78  
cgcgagcg gacgcggcag cgcctctgtc tcgcttttc ttattttcc cccctttccc  
60

## eolf-seql-S000001.txt

:ttctttt tttttttct tttctttct cccctcccccc cctttcacca tttccccctcg  
120  
  
.ggcgcttt cccccgggcag gggcagagcc ggtctcaccc cccgcctctc cccggcccccc  
180  
  
.cgccctat ggcgagaggg agccccctcc caaccgggc tcgagcggcg gcggcctca  
240  
  
.cgggggtc atcatggaac taattcgctg accgacccag cggccgcagc cgtgcgtccc  
300  
  
.tcgagcgc cagcgccgc gcccgcgccc cccgatccgc ttccccttc tccctcctca  
360  
  
.tggccgag tcgtcccgcg cgcacccgcct ccgcgcgcct atgagaatga ggtggtaacg  
420  
  
.ccccccga tgaccccgcg tcaccactgt gagggctaca gctctgccgg ggaggaggag  
480  
  
.ggaggaag aggaggagaa ggtagctaca gcaagctgg tagcaggcag atccaaagga  
540  
  
.tcatgaag tttccagggc ctggaaaaa ccagagattt tcttcctgt tgaaaaggc  
600  
  
.tcactagg gaagcacaga tgtggaaagt gaatgtgcgg aaaatgcctt caaatcagaa  
660  
  
.tttctcca tcccagagag atgaagtaat tcaatggctg gccaaactca agtaccaatt  
720  
  
.acctttac ccagaaacat ttgctctggc tagcagtctt ttggataggt ttttagctac  
780  
  
.taaaggct catccaaaat acttgagttt tattgcaatc agctgtttt tcctagctgc  
840  
  
.agactgtt gaggaagatg agagaattcc agtactaaag gtattggcaa gagacagttt  
900  
  
.gtggatgt tcctcatctg aaattttgag aatggagaga attattctgg ataagttcaa  
960  
  
.gggatctt cacacagcca caccattgga ttttcttcat attttccatg ccattgcagt  
1020  
  
.caactagg cctcagttac ttttcagttt gcccatttgc agcccatctc aacatttggc  
1080  
  
.tccttacc aagcaactac ttcactgtat ggcctgcaac caacttctgc aattcagagg  
1140

eolf-seql-S000001.txt  
:ccatgctt gctctggcca tggtagtct ggaaatggag aaactcattc ctgattggct  
1200  
:ctcttaca attgaactgc ttcatggaaac acagatggat agctcccagt tgatccattg  
1260  
:gggagctt gtggcacatc acctttctac tctgcagtct tccctgcctc tgaattccgt  
1320  
:atgtctac cgtccccctca agcacaccct ggtgacctgt gacaaaggag tggtagatt  
1380  
:atccctcc tctgtcccag gcccagactt ctccaaggac aacagcaagc cagaagtgcc  
1440  
:tcagaggt acagcagcct tttaccatca tctcccagct gccagtgggt gcaagcagac  
1500  
:ctactaaa cgcaaagttag agggaaatgga agtggatgac ttctatgatg gaatcaaacg  
1560  
:tctataat gaagataatg tctcagaaaaa tgtgggtct gtgtgtggca ctgatttatac  
1620  
:gacaagag ggacatgctt ccccttgcac acctttgcag cctgtttctg tcatgttagtt  
1680  
:aacaagtg ctaccttga gtgtaaacta aggtagacta ctttggaaat gagaacatgc  
1740  
.aatcagga aaggctgttag aaggaaatat accttaacag gctgatttgg agtgagccag  
1800  
.aaaaaaaaaaa taaaactctc attatttgtg tggctaatta taattcagcg ttatttaagc  
1860  
.ataaaagac caaaaaaaaaaaa aaaaaaaaaaaa  
1890

10> 79  
11> 1124  
12> DNA  
13> Homo sapiens

00> 79  
cgctgcca ccgcaccccg ccatggagcg gccgtcgctg cgccgcctgc tcctcgccgc  
60  
ctgggctg ctgctcctgc tcctgcccct ctcctttcc tcctttcgg acacctgcgg  
120  
cctgcgag ccggccctcct gccccccct gcccccgctg ggctgcctgc tggcgagac  
180

eolf-seql-S000001.txt  
gcgacgcg tgcggctgtc gccctatgtg cgcccgccggc gagggcgagc cgtgcggggg  
240  
gcggcgcc ggcagggggt actgcgcgcc gggcatggag tgcgtgaaga gccgcaagag  
300  
ggaagggt aaagccgggg cagcagccgg cggtccgggt gtaagcggcg tgtgcgtgtg  
360  
agagccgc tacccggtgt gcggcagcga cggcaccacc tacccgagcg gctgccagct  
420  
gcgcgcgc agccagaggg ccgagagccg cggggagaag gccatcaccc aggtcagcaa  
480  
gcacctgc gagcaaggtc cttccatagt gacgcccccc aaggacatct ggaatgtcac  
540  
gtgcccag gtgtacttga gctgtgaggt catcggaaatc ccgacacactg tcctcatctg  
600  
acaaggtt aaaaggggtc actatggagt tcaaaggaca gaactcctgc ctggtgaccg. ...  
660  
acaacctg gccattcaga cccgggtgg cccagaaaag catgaagtaa ctggctgggt  
720  
tggtatct cctctaagta aggaagatgc tggagaatat gagtgccatg catccaattc  
780  
aaggacag gttcagcat cagaaaaat tacagtggtt gatgccttac atgaaatacc  
840  
tggaaaaaa ggtgaaggtg ccgagctata aacctccaga atattattag tctgcatgg  
900  
aaagtagt catggataac tacattacct gttcttcct aataagtttcc tttaatcca  
960  
ccactaac acttttagtta tattcactgg ttttacacag agaaatacaa aataaagatc  
1020  
acatcaag actatctaca aaaatttatt atatattttac agaagaaaaag catgcatatc  
1080  
taaacaataaaataactt tttatcacaa aaaaaaaaaaaa aaaa  
1124  
  
10> 80  
11> 1867  
12> DNA  
13> Homo sapiens  
  
)0> 80

eolf-seql-S000001.txt

ttcgctgt ggcgggccc tggccgccc gctgttaac ttgccttccg ctggccata  
60

gatcttg cagtgaccga gcagcatcac tgttcttgg cgtgtgaaga taacccaagg  
120

ttgaggaa gttgctgaga agagtgtgct ggagatgctc tagaaaaaaa ttgaatagtg  
180

acgagttc cagcgcaagg gtttctgggt tgccaagaag aaagtgaaca tcatggatca  
240

acaacagc ctgccacatt acgctcaggg cttggctcc cctcagggtg ccatgactcc  
300

gaatccct atcttagtc caatgatgcc ttatggact ggactgaccc cacagcctat  
360

agaacacc aatagtctgt ctatittgga agagcaacaa aggcaagc agcaacaaca  
420

agcagcag cagcagcagc agcagcagca gcagcagcag cagcagcagc .agcagcagca  
480

agcagcag cagcagcagc agcagcagca gcaacaggca gtggcagctg cagccgttca  
540

agtcaacg tcccagcagg caacacaggg aacctcaggc caggcaccac agctttcca  
600

cacagact ctcacaactg cacccttgcc gggcaccact ccactgtatc cctccccat  
660

ctcccatg accccatca ctcctgccac gccagctcg gagagttctg ggattgtacc  
720

agctgcaa aatattgtat ccacagtcaa tcttggttgt aaacttgacc taaagaccat  
780

cacttcgt gcccggaaacg ccgaatataa tcccaagcgg tttgctgcgg taatcatgag  
840

taagagag ccacgaacca cggcactgat tttcagttct gggaaaatgg tgtgcacagg  
900

ccaagagt gaagaacagt ccagactggc agcaagaaaa tatgctagag ttgtacagaa  
960

tgggtttt ccagctaagt tcttggactt caagattcag aatatggtgg ggagctgtga  
1020

tgaagttt cctataaggt tagaaggcct tgtgctcacc caccaacaat ttagtagtta  
1080

agccagag ttatccctg gtttaatcta cagaatgatc aaacccagaa ttgttctcct

## eolf-seql-s000001.txt

1140

tttttgtt tctggaaaag ttgttattaac aggtgctaaa gtcagagcag aaatttatga  
1200

tcatttgaa aacatctacc ctattctaaa gggattcagg aagacgacgt aatggctctc  
1260

gtaccctt gcctccccca cccccttctt tttttttt taaacaatc agtttgttt  
1320

taccttta aatggtggtg ttgtgagaag atggatgttg agttgcaggg tgtggcacca  
1380

tgatgccc ttctgttaagt gcccaccccg cgatgccggg aaggggcatt atttgtgcac  
1440

agaacacc gcgcagcgtg actgtgagtt gctcataccg tgctgctatc tggcagcgc  
1500

cccattta ttatatatgtt gattttaaac actgctgttg acaagtttgtt ttgagggaga  
1560

actttaag ttttaaagcc acctctataa ttgattggac ttttaattt taatgtttt  
1620

ccatgaac cacagttttt atatttctac cagaaaaagta aaaatcttt taaaaagtgt  
1680

tttttcta atttataact cctaggggtt atttctgtgc cagacacatt ccacctctcc  
1740

tattgcag gacagaatat atgtgttaat gaaaatgaat ggctgtacat attttttct  
1800

cttcagag tactctgtac aataaatgca gtttataaaa gtgttaaaaa aaaaaaaaaa  
1860

aaaaaa  
1867

10> 81  
11> 3236  
12> DNA  
13> Homo sapiens

00> 81  
ccgggcgg cgtggcgtg agagggcgaaa cggggccgcg ctctgcttgc caatgtcttt  
60

aggcacc cggaaaggcac gcggAACCTC ggCGCGGTGC ttccagcagg gtctctccgc  
120

ctccagcc ccgcgcggcc ctggggcgtc tgccgcgcag ctggccggcc

eolf-seql-S000001.txt  
180

cctcttgc gagtctctcg cggcctcaaa gcgcggcctg cgtcgcttcc ggcagttccc  
240

ccgcgggc gatggctgcc gctggggcg cccggctgct gcgcgcccgt tctgctgtcc  
300

ggcggccc ggccggccgg tggctgcacc acgctgggtc ccgcgctgga tccagcggcc  
360

ctgaggaa ccggggcccg ggccggagcg cggaggcgag ccggtcgctg agcgtgtcgg  
420

cgggccccg gagcagctca gaagataaaaa taacagtcca cttaataaac cgtgatggtg  
480

acattaac aaccaaagga aaagttggtg attctctgct agatgttgtg gttgaaaata  
540

ctagatat tgatggctt ggtgcattgtg agggAACCTT ggcttggtaa acctgtcacc  
600

atcttga agatcacata tatgagaagt tagatgcaat cactgatgag gagaatgaca  
660

ctcgatct ggcataatgga ctaacagaca gatcacggtt gggctgccaa atctgtttga  
720

aaatctat ggacaatatg actgttcgag tgcctgaaac agtggctgat gccagacaat  
780

attgatgt gggcaagacc tcctgaacta gaacaaatag gaatattttc atgaaatttt  
840

ctatttt ataattatta tttcttaaag tgattaaatg agaacatgga tgagtggact  
900

atattatg actagctta ctatTTAAT tcacccTGCA taactactga attttgtcat  
960

ttgaaagt atgcaatttt tattttggtt atattacaaa aatgtcaatc aaatattaaa  
1020

atagttaa tgtgatagaa aaaccttaca tattttttc ttatgtttgt ttagcgactt  
1080

gcaaaatg tttccatata atctcatctg tttacctaga agataggta aggaaatata  
1140

attattcc ttttgcgtgtt gggtaaggc agagatctaa cctggcttgtt ttagggccat  
1200

caacttcc agaaaatctg tgctagaacc tttgttttat tcctataagc tatgtgttca  
1260

## eolf-seql-S000001.txt

:ctgaaact ggagaaat taactattt atttataat gtagttaat ctgaatgtgt  
1320  
:ggacaaaa atattaatt gtcagtaaa ctgcttaact tcaaagatag ttattgacct  
1380  
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1440  
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1500  
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1560  
.aaatctct gcctataaca gaatggaaac cttatgaatg aattgtgtt ctctgtcctg  
1620  
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1680  
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1740  
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1800  
tactataa ataaattcat aaaagttaac aaagggtac acgtatggt cttggaaat  
1860  
aataaac atcaactaac ttggactaat tgtgaggaag agcagaacaa attagtagaa  
1920  
aggttata agacaattga gttagctca tgtgtattat tgcagcttga tcatttatat  
1980  
atatttgt ctgtacaat gcttgacata cagcattgtg ttatgccat tggggacaca  
2040  
ggtgaaca agacaaggaa tgccatcagg gaattcacct tttatttagga aaatataaaa  
2100  
tgtatgta tgtgcagata atttgcttga actaaactga ctgttctgc taaaataagat  
2160  
taaactaa ttcatatgta aaaagtgatt aggaagaact tgaagtatca tttgatgctt  
2220  
taactatt gagtagttt ttttttttt ttttggtggg gggagcgggg gacagggct  
2280  
ctctgtca ctcaggccag agtacaatag tatgatctcg gctcactgca acttctgcct  
2340

eolf-seql-s000001.txt  
:cagtttca agggattctc gtgcctcagc ctcccaggta gctggtaacta caggcacgga  
2400  
  
>accacgcc tggctaattt ttgtatTTT tctaggaca gggtttacc acgttgccca  
2460  
  
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2520  
  
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2580  
  
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2640  
  
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2880  
  
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2940  
  
>atgagttt tggaggggac attcaaacca tagcagtgcataatTTAA agtacttcaa  
3000  
  
>ccaatTTA ttctcttaat tagcttcatt attcttgtct ttgtgtgtgg attacctaaa  
3060  
  
>ctccttcc agagctactt taatgatttattt attcaaccaa agcactctaa aatttagagt  
3120  
  
>aaattgtc ttatatttca aatttagaaaa gttcaaatga agttaatttgc ttatTTTA  
3180  
  
>aaaccttc taaaatttattt aaatggagga tataatctaa aaaaaaaaaaaa aaaaaaa  
3236

10> 82  
11> 787  
12> DNA  
13> Homo sapiens  
  
00> 82  
actgtgga ggggcgcacg cccggaagcg gcgagggttag ccatgacggc ctccgtgctg  
60

eolf-seql-S000001.txt  
aaagtatct cgctagccct gcgccccact agcgggcttc tgggaacttg gcagacgcag  
120  
tagagaga ctcaccagcg agcgtcattg ttgtctttct gggaaactcat tcccatgaga  
180  
agaacctc ttgcaaaaaaaaa gaagaaggta gatcctaaaa aagaccaaga agcaaaggag  
240  
cttgcaaaaa ggaagatccg aaaactggaa aaggctactc aagagcta at tcctattgaa  
300  
ttttattt cccctctaaa gttcttgat aaagcaagag agcggcctca ggtggagctc  
360  
cttgagg agactgagag gagagctctg cttctgaaga agtggtcctt gtacaaggcag  
420  
agagcgt a agatggagag ggacaccatc agggctatgc tagaagccc gcaggaagct  
480  
ggaggaac tgcaactgga atccccgaag ctccatgctg aggccatcaa .gcgggatcct ..  
540  
cctgttcc ccttgagaa ggaagggcca cattacacac caccgatccc taactaccaa  
600  
ccctgaag gcaggtacaa tgacatcacc aaggtgtaca cacaagtgga gtttaagaga  
660  
gacttgca ggctgctatc cttaaacatgc tgccccgtag agtaggaatg accagggttc  
720  
gtctgctt tccacagaat cagggatgct gttataataat actggttaa tcaaaaaaaaa  
780  
aaaaaa  
787  
  
10> 83  
11> 912  
12> DNA  
13> Homo sapiens  
  
00> 83  
aggatct gagcagctcc ttctagcatc cttcatcctt caggtaccag ccatccagac  
60  
  
tgcttgag ctgcagaaac tgagaccaga cctctggcct ggccctcccc aggggcctcc  
120  
  
tcctatacg tcactgcttc tgcatcagat actttcagct gcaactccct actgggtggg  
180

eolf-seql-s000001.txt  
:acccattt caggcagaag gtttggtac cctccactga ccctacaccc agggctgcta  
240  
gccgcttg tggcttcagg atgaaaggtg agaccccggt gaacagcaat atgagtattg  
300  
caagcacg caagatggtg gaacagctta agattgaagc cagttgtgt cgataaagg  
360  
tccaaggc agcagcagac ctgatgactt actgtgatgc ccacgcctgt gaggatcccc  
420  
atcacccc tgtgcccact tcggagaacc cttccggga gaagaagttc ttctgtgctc  
480  
ctctgagc tcccctgtcc ctttcacaa ctcctccctt ttccctctcc tggcccttc  
540  
taggtcag taattgttgt gagccctta ggctccttgc atcccatccc taacccttgc  
600  
gaccatgt gaggttatct gaagcacaag gcccacccctc acctatctgt cgacccatt  
660  
ctaccacc tttgtggccg accccaagca ccccagagat atgaggcacc ctttgctcca  
720  
cacagcag ggccccgtca gactctgcca gcgcgtcctg cccgcttccc tcggtgacct  
780  
tcagacaa tggagagggta tggccaggt tcttgctctc agtctcacct ggagctactg  
840  
aggtaaaa gccatttcaa gaataaagtc atccagagcc caaaaaaaaa aaaaaaaaaa  
900  
aaaaaaaa aa  
912  
  
10> 84  
11> 1700  
12> DNA  
13> Homo sapiens  
  
00> 84  
agccggcc gggcccccgc cagcctccct cctcgcggtcc ctgggtgtcc tccgcgggccc  
60  
  
cgcgatgc ggctggggccc gaggaccgcg gcgttggggc tgctgctgct gtgcgcgc  
120  
  
ggccggcg ccggcaaggc cgaggagctg cactacccgc tggcgagcg ccgcagcgac  
180

eolf-seql-S000001.txt  
1cgaccgcg aggcgctgct gggcgccag gaagatgtgg atgaatatgt taaactcggc  
240  
1cgaagagc agcaaaaaaag actgcaggcg atcataaaga aaatcgactt ggactcagat  
300  
1ctttctca ctgaaaagtga actcagttca tggattcaga tgtctttaa gcattatgct  
360  
1.gcaagaag caaaacaaca gtttggtaa tatgataaaa acagtgtatga tactgtgact  
420  
1.ggatgaat ataacattca gatgtatgtat cgtgtgattt actttgtatga gaacactgct  
480  
1.ggatgatg cagaagagga gtcctttagg aagcttcaact taaaggacaa gaagcgatt  
540  
1.aaaagcta accaggattc aggtcccggt ttgagttcttg aagaatttat tgctttgag  
600  
1.tcctgaag aagttgatta tatgacggaa tttgtcattt aagaagcttt .agaagaacat. ....  
660  
1.caaaaatg gtgatggatt tgtagtttg gaagaatttc ttgggtgatta caggtggat  
720  
1.aactgcaa atgaagatcc agaatggata cttgttgaga aagacagatt cgtgaatgt  
780  
1.tgacaaaag ataacgtatgg caggcttcat ccccaagagc tgttacctt ggttagtacct  
840  
1.taattcagg gcattgcaca agaggaggcg cttcatctaa ttgatgaaat ggatttgaat  
900  
1.tgacaaaa agctctctga agaagagatt ctggaaaacc cggacttgtt tctcaccagt  
960  
1.agccacag attatggcag acagctccat gatgactatt tctatcatga tgagctttaa  
1020  
1.tccgagcc tgtctcagta gagtactggc tcctttata atttggttacc agctttactt  
1080  
1.gtgataaa atattgtatgt tggatttac actcttaagt cttaaccaca gtcagaattt  
1140  
1.ttaatgttaaattttggctttt ttagaaaaaaa acaaaatctg atattttcc  
1200  
1.acgttatttgg agcaacaaaaa tattatattt gtgccatatg acaacaaagt ctccctaaa  
1260  
1.ctccatct gtttagtact gtattgtgga atatttgagt tctatattcca gacttgaaaaa

eolf-seql-S000001.txt

1320  
itggaggat tttagagatg cctgaacaat attatthaag tagtatgtga ccgagctata  
1380  
tttttgtt ttttgttcta agtagattta atttggaaac tgacaggaca atgttttag  
1440  
tttagcatt ttgtttaaaa acctttaaag aaacctttag aaggacttag acctcacata  
1500  
aatgttga gaagttctgc ttaattttaa aatggttct ataaagggtt ttattgtatg  
1560  
atagaact ttatatttt gcataatgtat agaggataat tataatttaat gtataactat  
1620  
cattatgg tgagtggaaat ttgacattgt ccaaacctt ttcattttg agtgattaaa  
1680  
tgaaatgt cctttgtaaa  
1700..

10> 85  
11> 961  
12> DNA  
13> Homo sapiens

00> 85  
gaggcgtg cgaactggtg gcagtgagag acttcggcg 60 acatggctcc cagcgtgcca  
ggcagaac ccgagtatcc taaaggcatc cggccgtgc tgctgggcc tcccggggcc  
120  
taaaggga cccaggcacc cagattggct gaaaacttct gtgtctgcc 180 tttagctact  
ggacatgc tgagggccat ggtggcttct ggctcagagc tagaaaaaaa gctgaaggca  
240  
tatggatg ctggaaact ggtgagtgtat gaaatggtag tggagctcat tgagaagaat  
300  
ggagaccc cttgtgcaa aaatggttt cttctggatg gttccctcg gactgtgagg  
360  
ggcagaaa tgctcgatga cctcatggag aagagggaaag agaagcttga ttctgtgatt  
420  
attcagca tcccagactc tctgctgatc cgaagaatca caggaaggct gattcacccc  
480  
gagtggcc gttcctacca cgaggagttc aaccctccaa aagagcccat gaaagatgac

## eolf-seql-S000001.txt

540

caccgggg aacccttgat ccgtcgatca gatgataatg aaaaggcctt gaaaatccgc  
600

gcaagcct accacactca aaccacccca ctcatacgatc actacaggaa acgggggatc  
660

ctccgccca tcgatgcattt ccagacccca gatgtcggt tcgcaagcat cctagcagcc  
720

ctccaaag ccacatgtaa agacttggtt atgttatct aatgttgggt ccaagaagga  
780

ttctttcc atccctgtga ggcaatgggt gggaatgata ggacaggcaa agagaagctt  
840

tcaggcta gcaaaaatat catttgcattt attgattaaa aaagcacttg cttgcattat  
900

ttggcgtg tgtgctactc tcatctgtgt gtatgtgtgt tgtgtgtgtg tgtgtgtgca  
960

961

10&gt; 86

11&gt; 700

12&gt; DNA

13&gt; Homo sapiens

00&gt; 86

ggcgtgag aagccatgag cagcaaagtc tctcgcgaca ccctgtacga ggccgtgcgg  
60

agtccctgc acgggaacca gcgcaagcgc cgcaagttcc tggagacggt ggagttgcag  
120

cagctga agaactatga tccccagaag gacaagcgct tctcggcac cgtcaggctt  
180

gtccactc cccgcccataa gttctctgtg tgtgtcctgg gggaccagca gcactgtgac  
240

ggctaagg ccgtggatata ccccccacatg gacatcgagg cgctaaaaaa actcaacaag  
300

taaaaaaaaac tggtaagaa gctggccaag aagtatgatg cgttttggc ctcagagtct  
360

gatcaagc agattccacg aatcctcgac ccaggtttaa ataaggcagg aaagttccct  
420

cctgctca cacacaacga aaacatggtg gccaaagtgg atgaggtgaa gtccacaatc

eolf-seql-S000001.txt  
480

!gttccaaa tgaagaagg tttatgtctg gctgttagctg ttggtcacgt gaagatgaca  
540

!cgatgagc ttgtgtataa cattcacctg gctgtcaact tcttggtgtc attgctcaag  
600

.aaactggc agaatgtccg ggccttatat atcaagagca ccatggcaa gccccagcgc  
660

atattaag gcacatttga ataaattcta ttaccagttc  
700

10> 87  
11> 3750  
12> DNA  
13> Homo sapiens

00> 87  
cgcgccgc gcggccccgg cgagcagggg aagccggtgg ccgcggctgc ggaacggcgc  
60

ggctgccg gttcgtaac cgtcgctcct cctcgctgac tcgcggctg tgaggcctgg  
120

cggctcgg gccgcaccgc gcggggccgc tcggagtgga ggccgcctgg gggcaggcgg  
180

tagaggag caggtacatg tgaagattti ttggcagctt agcgtggaaa ccattgatca  
240

ctgctctc atttctacct gttctgtgtt ggcaaggag agtgcacaaa tgagcaagat  
300

cgcagcaa aacagcactc caggggtgaa cggaaattagt gttatccata cccaggcaca  
360

ccagcggc ttacagcagg ttcctcagct ggtgcctgct ggccctgggg gaggaggcaa  
420

ctgtggct cccagcaagc agagcaaaaa gagttcgccc atggatcgaa acagtgacga  
480

atcgccaa cgccgagaga ggaacaacat ggctgtgaaa aagagccggt tggaaagcaa  
540

agaaaagca caagacacac tgcagagagt caatcagctc aaagaagaga atgaacggtt  
600

aagcaaaa atcaaattgc tgaccaagga attaagtgtt ctcaaagatt tgtttcttga  
660

atgcacac aaccttgcag acaacgtaca gtccattagc actgaaaata cgacagcaga

## eolf-seql-S000001.txt

720

rgcgacaat gcaggacagt agacacctacc ctttccagac ttttagagctt gtggcttgaa  
780

ttaaaggc gtgaccaccg acaccactca tgtcaatggc tgaaagttgt ccatttccat  
840

.ctcaaaga cccattggag gctatttct gggatcagca ctgaagagtt gattagctaa  
900

atgttagc cttgttaattc gaatatctgg ttttaaatga tagaggttt tggggatc  
960

aatccccc aaatgttaag gtatatggta aaaaaagaaa tatctggat cccgatgttc  
1020

aataaattc ctgacttccc aagaaatgct tctttttaa gttgacaaaa ggaatgggaa  
1080

tggcaggc cgcgcagaag gttcttggtt ttaatggata ggctgaattt gattaagaaa  
1140

ttgaatgc cacctatggt aatctatttgc tgattttctt ctaaattatg tattataat  
1200

gttagagct atagaaagca atgagtgtgt aatttggagt gattttatat atggcataaa  
1260

ttgtttta acataatttgc tactgtttc ccccaaaagt acaagttttt gagtagcaat  
1320

caggttaa gtaaagaaac ttcatcacat cttataggta gtgtgtggcc aattgactta  
1380

aaatacaa ataacatttgc ggaagcaaat agattaaaca caaaaataaaa actaaagcat  
1440

gaattatg ttttgagat acctttgggc ttagattggc attgttttat tctaaaaacc  
1500

actcagtgc gtgttagagaa acttgtgtac caaaattttgc gtttctgcag atgctagtgt  
1560

ttttggat acaattttgc caaccaagtt agtaaacaaa atatcttac agtttgc  
1620

caagctac tgatgagggt ttggaaatatt aattcagaag gtagttctc ttgtgttcaa  
1680

tagctgcc atggggctgt tacttt  
1740

atttgatc ttaaccaagt gattatttgc gaaatgtatc aactccatgc catctcccaa  
1800

## eolf-seql-s000001.txt

taattgtc taagaaaact tgaaagtgt aaggtttaac cttaattta tttctcttaa  
1860

acatctt tgatattgtt gttgtgacat ttctttctt ggtagtggg cttccagac  
1920

tgtaccac tgcttctgtt tattcattta tatgctttg tgtcccataa attatttcag  
1980

aatgctga taaaactcag gatattgaca ttttgttga gactaaaaaa tggcagtcgc  
2040

aagtaggg actcttagagt ctggcttacg tcagtgttgg tagtttagat tgtcttgtc  
2100

cgtttttt cttctctctt ttgctttctt ttcttctct tttttctta gcacagttct  
2160

ctcaaatt tgtgtatttt ttgtgtgcct gggctggaga tgagagactg agtcataact  
2220

ttaaaag ttgtgttat caggtatctt atttgaacat ggtcattttt gcccacattg  
2280

gttcata ctaggacttg ggatgatgt aactcaagtt gcaccctccg  
2340

tggggaa gattgctgac cgtgccgtt ctggcagga gaagacatca tgggtccag  
2400

actcagca aagccattct taagagtcgt gaggtccttc tgaatgtaaa actggagccc  
2460

gagaagct gtcccaggag ggctgttaac tccctataaga gccaggagac aggatagggg  
2520

tctagggt ccaacaccag cttaccttgg agtatgaatc tacccatgaa ggatgagaga  
2580

tttgaaa aactagccag gacacaccca caggatccta ctggctcctt agcagctgat  
2640

gtgttaca taattaactt aattggagat gcattaggtc acttgaatgt ataagcaagc  
2700

ctatggta ggcgctacag acattnaat ctcttggaa ttcgatgctc ccatggaatt  
2760

taccagtt atatgaattt acttaagtat cttgaaaaag aaactttaga gaaagcatca  
2820

gggtgttaca ctcagtattt caaatcagaa cacaagattt gaaactttgg aaaaatgggt  
2880

eolf-seql-S000001.txt  
:aagctttc ctattagcca tggaaatgca aagtttagca gaagcaagca attaggcaga  
2940  
:acaaaaaat gttaagcatg gtgttgtcta tcttattgaa gtggttggaa atgaaagctt  
3000  
:aatttgat agatttatca gtataaaatt agggaaacca cgtgtgggaa atgaatcaat  
3060  
:agagcttc gggaaattgtg aggtgacttt tgtaactttt gttctgtgtg tgacctgtga  
3120  
:cactagga tgtgatctgc ccttgtggc aggtccagca tagttaggag ttaggcttta  
3180  
:ataaaattt ctagctgcat ctgagtctcc tgggatgggt gctcttggc tggtttggc  
3240  
:cgatgggt gagatcagag cagctttcc tgctgctggc ccctgcaatc agttgttggg  
3300  
.ccaggatgc agatcactaa gtagtaagat ttatcaaaa cacgaccagg tccgaaatgc  
3360  
tgtcatgag tgtgaaattc tcaaatttac ataaaaagta gaagtataga cagtttaaca  
3420  
tggtatta aaggagagga aattgttagca gctttcacg tttcccagtc cccatttagag  
3480  
cttggagac ctgttacctg aacaacccat tttgcactca gtgctttctg atgccttagg  
3540  
aattgttt tgttcacaa aagctggaa ggaagaagtc cattctgcag ctgttagatc  
3600  
cctctcag gaaaaagtac taacttgttc tttttgtcc tggcttcat cagttgtga  
3660  
tttctcta tttttttaa atataattt atttcttca acaaataaa aataaaaaaac  
3720  
ctttggaa caatgaaaaa aaaaaaaaaa  
3750  
  
10> 88  
11> 1526  
12> DNA  
13> Homo sapiens  
  
00> 88  
atctgcgc aggcccccgg ctcctaagtc tacccagggaa ctgaccctgc tctctccctt  
60

eolf-seql-S000001.txt  
:ctgttaga catgggcact ccacagaagg atgttattat caagtcagat gcaccggaca  
120  
.ttgttatt ggagaaaacat gcagattata tcgcattccta tggctcaaag aaagatgatt  
180  
.gaatactg tatgtctgag tatttgagaa tgagtggcat ctattgggt ctgacagtaa  
240  
igatctcat gggacaactt catcgcatga atagagaaga gattctggca tttattaagt  
300  
.tgccaaaca tgaatgtgg ggaataagtg ctagtatcg acatgatcct catctttat  
360  
.actcttag tgctgtccag attcttacgc tgtatgacag tattatgtt attgacgtaa  
420  
aaagttgt ggaatatgtt aaaggtctac agaaagaaga tggttcttt gctggagata  
480  
tggggaga aattgacaca .agattctctt tttgtgcggg ggcaactttg .gctttgttgg ..  
540  
aagcttga tgctttaat gtggaaaagg caatcgaatt tgtttatcc tgtatgaact  
600  
gacggtgg atttgggtgc agaccagggtt ctgaatccca tgctggcag atctattgtt  
660  
acaggatt tctggctatt acaagtcagt tgcattcaagt aaattctgat ttacttggct  
720  
tggcttg tgaacgacaa ttaccctcag gcgggctcaa tggaggccg gagaagttac  
780  
gatgtatg ctactcatgg tgggtcctgg cttccctaaa gataatttga agacttcatt  
840  
attgatag agagaaaactg cgtaatttca ttttagcatg tcaagatgaa gaaacggggg  
900  
tttgcaga caggccagga gatatggtgg atcctttca tactttattt ggaattgctg  
960  
ttgtcact tttgggagaa gaacagatta aacctgttaa tcctgtctt tgcatgcctg  
1020  
gaagtgc tcaagagagt aatgttcagc ctgagctagt gagctagatt cattgaattt  
1080  
agttgcattt agtatactt tgccatttta acatttctgt atttgaagt cttatcgaat  
1140  
aaaagtga ctactgttaa tattttgtat attgtgttaa attaatttta ataaattata

1200 eolf-seql-S000001.txt  
1260  
1320  
1380  
1440  
1500  
1526  
10> . 89 ..  
11> 2650  
12> DNA  
13> Homo sapiens  
00> 89  
:cgcgctgg tggcgccggc gcgtcggtgc agttgcgcga tctgtcagga gcccggccgg  
60  
120  
180  
240  
300  
360  
420  
480  
540  
550  
560  
570  
580  
590  
600  
610  
620  
630  
640  
650  
660  
670  
680  
690  
700  
710  
720  
730  
740  
750  
760  
770  
780  
790  
800  
810  
820  
830  
840  
850  
860  
870  
880

## eolf-seql-S000001.txt

600

ttaagaag caacaaaact gacggaggag agggacggca gcctgaacca gagctctggg  
660

.ccgctatg gcacagaccc caccctcag cactaccca gttcggtgt gacctccatc  
720

:caactaca acaacttcca cgtagccggg ggccaaggac tcaccgtctt tggaggtgtg  
780

.ctttcgt ctcatacggg gacttgcgt acgagaggag gaacaggagt gacactctt  
840

ggcccttt atgactatga agcacggaca gaagatgacc tgagtttca caaaggagaa  
900

.attcaaa tattgaacag ctccgaagga gattgggtggg aagcccgtc cttgacaact  
960

agagacag gttacattcc cagcaattat gtggctccag ttgactctat ccaggcagaa  
1020

gtggtaact ttggaaaact tggccgaaaa gatgctgagc gacagctatt gtcctttgga  
1080

cccaagag gtaccttct tatccgcgag agtcaaacc caaaagggtgc ctattcactt  
1140

tatccgtg attggatga tatgaaagga gaccatgtca aacattataa aattcgcaaa  
1200

tgacaatg gtggatacta cattaccacc cgggcccagt ttgaaacact tcagcagctt  
1260

acaacatt actcagagag agctgcaggt ctctgctgcc gcctagtagt tccctgtcac  
1320

agggatgc caaggcttac cgatctgtct gtcaaaacca aagatgtctg ggaaatccct  
1380

agaatccc tgcagtttat caagagactg ggaaatgggc agtttgggaa agtatggatg  
1440

tacctgga atggaaacac aaaagtagcc ataaagactc ttaaaccagg cacaatgtcc  
1500

cgaatcat tccttgagga agcgcagatc atgaagaagc tgaagcacga caagctggtc  
1560

gctctatg cagtgggtgtc tgaggagccc atctacatcg tcaccgagta tatgaacaaa  
1620

aagtttac tggatttctt aaaagatgga gaaggaagag ctctgaaatt accaaatctt  
1680

## eolf-seql-S000001.txt

:ggacatgg cagcacaggt ggctgcagga atggcttaca tcgagcgcata  
1740  
:tagagatc tgcgatcagc aaacattcta gtgggaaatg gactcatatg caagattgct  
1800  
:cttcggat tggcccgatt gatagaagac aatgagtaca cagcaagaca aggtgcaaag  
1860  
:ccccatca agtggacggc ccccgaggca gccctgtacg ggaggttcac aatcaagtct  
1920  
:cgtgtggc cttttggaaat cttactcaca gagctggta ccaaaggaag agtgcata  
1980  
:aggcatga acaaccggga ggtgttggag caggtggagc gaggctacag gatgccctgc  
2040  
:cgaggact gccccatctc tctgcatgag ctcatgatcc actgctggaa aaaggaccct  
2100  
:agaacgcc ccactttga gtacttgcag agcttccctgg aagactactt taccgcgaca  
2160  
:gccccagt accaacctgg tgaaaacctg taaggccgg gtctgcggag agaggccttg  
2220  
:ccagaggc tgccccaccc ctccccatta gcttcaatt ccgtagccag ctgctcccc  
2280  
:agcggAAC cgcccaggat cagattgcat gtgactctga agctgacgaa cttccatggc  
2340  
:tcattaat gacacttgc cccaaatccg aacctccctt gtgaagcatt cgagacagaa  
2400  
:ttgttatt tctcagactt tggaaaatgc attgtatcga tgttatgtaa aaggccaaac  
2460  
:ctgttcag tgtaaatagt tactccagtg ccaacaatcc tagtgcttc cttttttaaa  
2520  
:tgcaaatc ctatgtgatt ttaactctgt cttcacctga ttcaactaaa aaaaaaaaaag  
2580  
:ttatTTTc caaaagtggc ctctttgtct aaaacaataa aattttttt catgttttaa  
2640  
aaaaccaa  
2650

10> 90  
11> 2073

eolf-seql-S000001.txt

?12> DNA  
?13> Homo sapiens

?100> 90  
!atttagat aatgggctgt gtgcaatgt aaggataaaga agcaacaaaa ctgacggagg  
60

?120> 120  
!aggggacgg cagcctgaac cagagctctg ggtaccgcta tggcacagac cccacccctc

?180> 180  
!cactaccc cagcttcggt gtgacacctca tccccaaacta caacaacttc cacgcagccg

?240> 240  
!ggccaagg actcaccgtc tttggaggtg tgaactcttc gtctcatacg gggaccttgc

?300> 300  
!acgagagg aggaacagga gtgacactct ttgtggccct ttatgactat gaagcacgga

?360> 360  
!gaagatga cctgagttt cacaaaggag aaaaatttca aatattgaac agctcgaaag

?420> 420  
!gattggtg ggaagccgc tccttgacaa ctggagagac aggttacatt cccagcaatt

?480> 480  
!gtggctcc agttgactct atccaggcag aagagtggta ctttggaaaa ctggccgaa

?540> 540  
!gatgctga gcgacagcta ttgtccttg gaaacccaag aggtacctt cttatccgct

?600> 600  
!agtgaaac caccaaaggc gcctattcac tttctatccg tgattggat gatatgaaag

?660> 660  
!gaccatgt caaacattat aaaattcgca aacttgacaa tggtgacatac tacattacca

?720> 720  
!cgggcca gtttgaaca cttcagcagc ttgtacaaca ttactcagag aaagctgatg

?780> 780  
!ttgtgttt taacttaact gtgattgcat cgagttgtac cccacaaact tctggattgg

?840> 840  
!aaagatgc ttggaaagg gcacgtcggt cgttgtgtct ggagaagaag ctgggtcagg

?900> 900  
!tgtttcgc tgaagtgtgg cttggtaacct ggaatggaaa cacaaaagta gccataaaga

?960> 960  
!cttaaacc aggcacaatg tcccccaat cattccttga ggaagcgcag atcatgaaga

?1020> 1020  
!ctgaagca cgacaagctg gtccagctct atgcagtgg gtctgaggag cccatctaca

eolf-seql-S000001.txt

```
>gtcaccga gtatatgaac aaaggaagt tactggatt cttaaaagat ggagaaggaa
1080

>gctctgaa attaccaaat cttgtggaca tggcagcaca ggtggctgca ggaatggctt
1140

>atcgagcg catgaattat atccatagag atctgcgatc agcaaacatt ctatggggaa
1200

>ggactcat atgcaagatt gctgacttcg gattggcccg attgatagaa gacaatgagt
1260

>acagcaag acaaggtgca aagttccccca tcaagtggac ggcccccggag gcagccctgt
1320

>gggagggtt cacaatcaag tctgacgtgt ggtctttgg aatcttactc acagagctgg
1380

>accaaagg aagagtgcc aacccaggca tgaacaaccg ggaggtgctg gagcaggtgg
1440

>cggaggcta caggatgcc tgcccgagg actgccccat ctctctgcat gagctcatga
1500

>cactgctg gaaaaaggac cctgaagaac gccccacttt tgagtacttg cagagcttcc
1560

>aagacta ctttaccgcg acagagcccc agtaccaacc tggtaaaaac ctgttaaggcc
1620

>ggtctgctg gagagaggcc ttgtcccaga ggctgccccca cccctccccca ttagcttca
1680

>tccgttagc cagctgctcc ccagcagcgg aaccgccccag gatcagattt catgtgactc
1740

>aagctgac gaacttccat ggccctcatt aatgacactt gtccccaaat ccgaacctcc
1800

>tgtgaagc attcgagaca gaaccttgtt atttctcaga ctttggaaaa tgcattgtat
1860

>atgttatg taaaaggcca aacctctgtt cagtgtaaat agttactcca gtgccaacaa
1920

>ctagtgct ttccctttt aaaaatgcaa atcctatgtg attttaactc tgtcttcacc
1980

>attcaact aaaaaaaaaa aagtattatt ttccaaaagt ggcctctttg tctaaaacaa
2040

>aaattttt tttcatgttt taacaaaaac caa
2073
```

eolf-seql-S000001.txt

:10> 91  
:11> 2000  
:12> DNA  
:13> Homo sapiens

00> 91  
.gcgcaggt ctgaggagct gagaagggag gcttacgtga aggaaattta gataatggc  
60

tgtgcaat gtaaggataa agaagcaaca aaactgacgg aggagagggg cggcagcctg  
120

.ccagagct ctgggtaccg ctatggcaca gaccccaccc ctcagcacta ccccagctc  
180

tgtgacct ccatccccaa ctacaacaac ttccacgcag ccgggggccca aggactcacc  
240

ctttggag gtgtgaactc ttcgtctcat acggggacct tgcgtacgag aggaggaaca  
300

agtgcacac tctttgtggc ccttatgac tatgaagcac ggacagaaga tgacctgagt  
360

tcacaaaag gagaaaaatt tcaaataattg aacagctcg aaggagattg gtggaaagcc  
420

ctccttga caactggaga gacaggttac attccagca attatgtggc tccagttgac  
480

tatccagg cagaagagtg gtactttgga aaacttggcc gaaaagatgc tgagcgacag  
540

attgtcct ttggaaaccc aagaggtacc tttcttatcc gcgagagtga aaccaccaaa  
600

tgcctatt cactttctat ccgtgattgg gatgatatga aaggagacca tgtcaaacat  
660

taaaattc gcaaacttga caatggtgga tactacatta ccaccgggc ccagttgaa  
720

acttcagc agcttgtaca acattactca ggtacctgga atggaaacac aaaagttagcc  
780

aaagactc ttAAACCAGG cacaatgtcc cccgaatcat tccttgagga agcgcagatc  
840

gaagaagc tgaagcacga caagctggc cagctctatg cagtgggtgc tgaggagccc  
900

catacatcg tcaccgagta tatgaacaaa ggaagttac tggatttctt aaaagatgga  
960

aggaagag ctctgaaatt accaaatctt gtggacatgg cagcacaggt ggctgcagga

## eolf-seql-S000001.txt

1020

ggcttaca tcgagcgcac gaattatatac catagagatc tgcgatcagc aaacattcta  
1080

ggggaaatg gactcatatg caagattgct gacttcggat tggcccgatt gatagaagac  
1140

tgttgtaca cagcaagaca aggtgcaaag ttccccatca agtggacggc ccccgaggca  
1200

cctgtacg ggaggttcac aatcaagtct gacgtgtggt cttttggaat cttaactcaca  
1260

gctggtca ccaaaggaag agtgcatac ccaggcatga acaaccggga ggtgctggag  
1320

ggtgaggc gaggctacag gatgccctgc ccgcaggact gccccatctc tctgcatgag  
1380

catgatcc actgctggaa aaaggaccct gaagaacgcc ccactttga gtacttgcag  
1440

cttcctgg aagactactt taccgcaca gagccccagt accaacctgg tgaaaacctg  
1500

aggcccgg gtctgcggag agaggccttg tcccagaggc tgccccaccc ctccccattta  
1560

tttcaatt ccgttagccag ctgctccccca gcagcggAAC cgcccaggat cagattgcat  
1620

gactctga agctgacgaa cttccatggc cctcattaat gacacttgc cccaaatccg  
1680

cctccctct gtgaagcatt cgagacagaa cttgttatt tctcagactt tgaaaaatgc  
1740

tgtatcga ttttatgtaa aaggccaaac ctctgttcag tgtaaatagt tactccagtg  
1800

aacaatcc tagtgcttcc ttttttaaa aatgcaaatc ctatgtgatt ttaactctgt  
1860

tcacctga ttcaactaaa aaaaaaaaaaag tattatttc caaaagtggc ctcttgc  
1920

aacaataa aattttttt catgtttaa caaaaaccaa aaaaaaaaaa aaaaaaaaaa  
1980

aaaaaaaa aaaaaaaaaa  
2000

eolf-seql-S000001.txt

?11> 2349  
?12> DNA  
?13> Homo sapiens

!00> 92  
:tcttatcg gttcccatcc cagttgttga tcttatgcaa gacgctgcac gaccccgcgc  
60

:gcttgtcg ccacggcact tgaggcagcc ggagatactc tgagttactc ggagcccgac  
120

:ctgagggt gagatgaacg cgctggcctc cctaaccgtc cggacctgtg atcgcttctg  
180

:agaccgaa ccggcgctcc tgcccccccggg gtgacgcgca gcccccaagcc gcccagacac  
240

.ggccccag gccaaggcacc ccatcaggct accccgtgga gggatgcaca ccctttcttc  
300

.cctgtccc cagtgtatggg ctcctcagc cgccctgtt gcccgcctgag gggcctggga  
360

:tctagagc cctggctggt ggaagcagta aaaggagcag ctctggtaga agctggcctg  
420

.gggagaag ctaggactcc tctggcaatc cccataaccc cttggggcag acgcccgttgg  
480

ggaggctg aagacagtgg aggcctgga gaggacagag aaacactggg gctgaaaacc  
540

cagttccc ttccctgaagc ctggggactt ttggatgtatg atgatggcat gtatggtag  
600

agaggcaa ccagtgtccc tagagggcag ggaagtcaat ttgcagatgg ccagcgtgct  
660

cctgtctc ccagccttct gataaggaca ctgcaagggtt ctgataagaa cccaggggag  
720

gaaagccg aggaagaggg agttgctgaa gaggagggag ttaacaagtt ctcttatcca  
780

atcacacc gggagtgttg tccagccgtg gaggaggagg acgtgaaga agctgtaaag  
840

agaagctc acagaacctc tacttctgcc ttgtctccag gatccaagcc cagcacttgg  
900

gtcttgcc caggggagga agagaatcaa gccacggagg ataaaagaac agaaagaagt  
960

aggagcca ggaagacctc cgtgtccccc cgatcttcag gctccgaccc caggtcctgg  
1020

## eolf-seql-S000001.txt

agtatcggt caggagaggc gtccgaggag aaggaggaaa aggcacacga agaaactggg  
1080  
aggagaag ctgccccagg gccgcaatcc tcagccccag cccagaggcc ccagctcaag  
1140  
ctgggttgt gccaacccag tcatgtttttt gggggcagct  
1200  
gaaggatg gagaagctga gtgtcctccc tgcattttttt caccaagtgc cttcctgaag  
1260  
ctgggtgt attggccagg agaggacaca gaggaagagg aagatgagga agaagatgag  
1320  
cagtgact ctggatcaga tgaggaagag ggagaagctg aggcttcctc ttccactcct  
1380  
tacaggtg tcttcttcaa gtcctgggtc tatcagccag gagaggacac agaggaggag  
1440  
agatgagg acagtatac aggtcagcc gaggatgaaa gagaagctga gacttctgct  
1500  
cacacccc ctgcaagtgc tttcttgaag gcctgggtgt atcggccagg agaggacacg  
1560  
ggaggagg aagatgagga tgtggatagt gaggataagg aagatgattc agaagcagcc  
1620  
aggagaag ctgagtcaga cccacatccc tcccacccgg accagagtgc ccacttcagg  
1680  
ctggggat atcgacctgg aaaagagaca gaggaagagg aagctgtga ggactgggg  
1740  
agctgagc cctgccccctt ccgagtggcc atctatgtac ctggagagaa gccaccgcct  
1800  
ctgggctc ctcttaggct gcccctccga ctgcaaaggc ggctcaagcg cccagaaacc  
1860  
tactcatg atccggaccc tgagactccc ctaaaggcca gaaagggtgcg cttctccgag  
1920  
ggtcactg tccatttcct ggctgtctgg gcagggccgg cccaggccgc cggccagg  
1980  
ctgggagc agttgtctcg ggatcgacgc cgcttcgcac gccgcacgc ccaggcccag  
2040  
ggagctga gcccctgcct caccctgct gcccggccca gagcctggc acgcctcagg  
2100

eolf-seql-s000001.txt  
!ccccaccc tt tagccccat ccctgccctc acccagaccc tgccttcctc ctctgtccct  
2160  
:gtccccag tccagaccac gcccttgagc caagctgtgg ctacaccctc ccgctcctct  
2220  
:tgctgcag cggctgccct ggacctca gggaggcggtg gctgagacca actggtttgc  
2280  
.ataattta ttaactatTT atttttcta agtgtgggtt tatataagga ataaagcctt  
2340  
.gatttgt  
2349  
  
10> 93  
11> 3162  
12> DNA  
13> Homo sapiens  
  
00> 93  
gcccttagc cctctttcgg ggatactggc cgacccttc ttcctttcc cctttagtga  
60  
  
gcctcccc cgtcgccgccc cggcttcccg gagccgactg cagactccct cagcccggtg  
120  
  
cccccggt ccggacgccc aggtcgccggc ttgcagaaa ctcgggcccc tccatccgccc  
180  
  
cagaaaaag ggagcgatgt tgatctcagg aagcacaaag ggaccccttccct agctctgact  
240  
  
accacggc gctcaccctg gacagtatca ctccgtggag gaagactgtg agactgtggc  
300  
  
gaagccag attgttagcca cacatccgccc cctgccttac cccagagccc tggagcagca  
360  
  
tggctgca gatcacagac acagtggagga tatgagtgtt ggggtgagca cctcagcccc  
420  
  
tttccccca acctcgccca caagcgtggg catgtctacc ttctccatca tggactatgt  
480  
  
tgttcgtc ctgctgctgg ttctctctt tgccattggg ctctaccatg cttgtcgtgg  
540  
  
ggggccgg catactgttg gtgagctgct gatggcgac cgcaaaatgg gctgccttcc  
600  
  
tggcactg tcctgctgg ccaccccca gtcagccgtg gccatcctgg gtgtgccgtc  
660

eolf-seql-s000001.txt  
tagatctac cgatttggga cccaatattg gttcctgggc tgctgctact ttctggggct  
720  
tgtataacct gcacacatct tcataccccgt tttctaccgc ctgcacatcta ccagtgccta  
780  
tagtacacctg gagcttcgat tcaataaaac tgtgcgagtg tgtggaactg tgaccttcat  
840  
ttcagatg gtgatctaca tggagttgt gctctatgct ccgtcattgg ctctcaatgc  
900  
tgactggc tttgatctgt ggctgtccgt gctggccctg ggcattgtct gtaccgtcta  
960  
cagctctg ggtgggctga aggccgtcat ctggacagat gtgtccaga cactggtcat  
1020  
tcctcggg cagctggcag ttatcatcgt ggggtcagcc aaggtggcg gcttggggcg  
1080  
tgtgggcc gtggcttccc agcacggccg catctctggg tttgagctgg atccagaccc  
1140  
ttgtgcgg cacaccttct ggaccttggc cttcgggggt gtcttcatga tgctctcctt  
1200  
acggggtg aaccaggctc aggtgcagcg gtacctcagt tccgcacgg agaaggctgc  
1260  
tgctctcc ttttatgcag tttccctt ccagcaggtg tccctctgcg tgggctgcct  
1320  
ttggcctg gtcatgttcg cgtattacca ggagtatccc atgagcattc agcaggctca  
1380  
cagcccca gaccagttcg tcctgtactt tgtgatggat ctcctgaagg gcctgccagg  
1440  
tgccaggg ctttcattt cctgcctt cagcgctct ctcagcacta tatcctctgc  
1500  
ttaattca ttggcaactg ttacgatgga agacctgatt cgaccttggt tccctgagtt  
1560  
ctgaagcc cgggccatca tgctttccag aggccttgcc tttggctatg ggctgctttg  
1620  
taggaatg gcctatatattt cctccagat gggacctgtg ctgcaggcag caatcagcat  
1680  
ttggcatg gttggggac cgctgctgg actcttctgc cttggaatgt tctttccatg  
1740  
ctaaccct cctggtgctg ttgtggccct gttggctggg ctcgtcatgg cttctggat

eolf-seql-s000001.txt

1800

ggcatcgaa agcatcgtga ccagcatggg cttcagcatg ccacccttc cctctaattgg  
1860

.ccagcttc tccctgccca ccaatctaac cgttgccact gtgaccacac tcatgcctt  
1920

.ctacccat tccaaaggcca cagggtcgca gcgggttat tccttgtt acttatggta  
1980

.tgtctcac aactccacca cagtgattgt ggtgggcctg attgtcagtc tactcactgg  
2040

gaatgcga ggccgggtccc tgaaccctgc aaccatttac ccagtgttgc caaagctcct  
2100

ccctcctt ccgttgtcct gtcagaagcg gctccactgc aggagctacg gccaggacca  
2160

tcgacact ggcctgtttc ctgagaagcc gaggaatgg tgcgtggggg acagcagaga  
2220

aggaggccc atggccctgg atggcacagc ctatcagggg agcagactcca cctgcatacct  
2280

aggagacc tccctgtat gttgactcag gaccccgct ctgtcctcac tgtgccaggc  
2340

tagccaga ggccaccctg tagtacaggg atgagtcttg gtgtgttctg cagggacagg  
2400

tggatgtat ctagctcata ccaaaggacc ttgttctgag aggttcttgc ctgcaggaga  
2460

ctgtcaca tctcaaggcat gtggaggcacc gtttttctcg tcgcttgcca atcttgtttt  
2520

aaggatca ggctcgtagg gagcaggatc atgcgcagaaa tagggatggg agtgccatcc  
2580

ggggaaaaaa gataatggct tcgtatccaa catagccata gtcctttgaa gtaatggct  
2640

aaacagca cccgggtat aattggccca gggccctgatt caggactgac tttccaccat  
2700

aaatggaa gctgtttttt cctgtatggccc tatttcagta ccaggttttgc tggccacagt  
2760

ggccat taccatcc agatgggg tyacactcaa gccccccca ttttccatcg  
2820

2880

## eolf-seql-s000001.txt

atttgtctt tgtgttagagc aagcacgttt tccaccacac tgtctccatc ctccacacct  
2940

tgatggaca cttaagagac ggggcaaattg tggatccaag aaaccagggc catgaccagg  
3000

:cactgtgg agcagccatc tatctacctg actcctgagc caggctgccg tggtgtcatt  
3060

:tgtcatcc gtgctctgtt tcctttgga gtttcttctc cacattatct ttgttcctgg  
3120

:aataaaaaa ctaccattgg acctaaaaaaaaaaaaaaaaaa aa  
3162

:10> 94  
:11> 20  
:12> DNA  
:13> Homo sapiens

:00> 94  
:acatcgct cagacaccat  
20

:10> 95  
:11> 17  
:12> DNA  
:13> Homo sapiens

00> 95  
:caggcgcc caatacg  
17

10> 96  
11> 28  
12> DNA  
13> Homo sapiens

00> 96  
aatccgtt gactccgacc ttcacctt  
28

10> 97  
11> 20  
12> DNA  
13> Homo sapiens

00> 97  
ggccaaacc gcgagaagat  
20

## eolf-seql-S000001.txt

```
:10> 98
:11> 20
:12> DNA
:13> Homo sapiens

!00> 98
:cacccggag tccatcacga
20

!10> 99
:11> 32
:12> DNA
:13> Homo sapiens

:00> 99
:atgtacgt tgcttatccag gctgtgctat cc
32

:10> 100
:11> 25
:12> DNA
:13> Homo sapiens

00> 100
actggggac gacatggaga aaatc
25

10> 101
11> 22
12> DNA
13> Homo sapiens

00> 101
tggctggg gtgttgaagg tc
22

10> 102
11> 21
12> DNA
13> Homo sapiens

00> 102
gaggacaa aataactacc c
21

10> 103
11> 22
12> DNA
```

eolf-seql-S000001.txt

?13> Homo sapiens

!00> 103  
!atccagga gcttttctt ca  
22

?10> 104  
?11> 22  
?12> DNA  
?13> Homo sapiens

!00> 104  
!atccagga gcttttctt ca  
22

?10> 105  
?11> 32  
?12> DNA  
?13> Homo sapiens

.00> 105  
.ctgggctg agaaaactgat ggactggct ga  
32

10> 106  
11> 23  
12> DNA  
13> Homo sapiens

00> 106  
ggaaaaggc cactgaaaaa tct  
23

10> 107  
11> 21  
12> PRT  
13> Homo sapiens

00> 107

y Cys Thr Gly Gly Cys Thr Gly Cys Gly Gly Thr Thr Gly Ala Ala  
5 10 15

y Thr Thr Gly Gly  
20

10> 108  
11> 17  
12> DNA

eolf-seql-S000001.txt

:13> Homo sapiens

:00> 108  
:gcgggctcgacacctg  
17

:10> 109  
:11> 20  
:12> DNA  
13> Homo sapiens

00> 109  
ccactttt ccataaacacc  
20

10> 110  
11> 32  
12> DNA  
13> Homo sapiens

00> 110  
tccgtttt cacaacagct ttctccatag gt  
32

10> 111  
11> 16  
12> DNA  
13> Homo sapiens

00> 111  
aaaacgcac ggccag  
16

10> 112  
11> 17  
12> DNA  
13> Homo sapiens

00> 112  
ggaaacag ctatgac  
17

10> 113  
11> 479  
12> PRT  
13> Homo sapiens

00> 113  
: Asp Glu Thr Ser Pro Leu Val Ser Pro Glu Arg Ala Gln Pro Pro

## eolf-seql-S000001.txt

5

10

15

s p Tyr Thr Phe Pro Ser Gly Ser Gly Ala His Phe Pro Gln Val Pro  
20 25 30

. y Gly Ala Val Arg Val Ala Ala Ala Gly Ser Gly Pro Ser Pro  
35 40 45

. o Gly Ser Pro Gly His Asp Arg Glu Arg Gln Pro Leu Leu Asp Arg  
50 55 60

. a Arg Gly Ala Ala Ala Gln Gly Gln Thr Gln Thr Val Ala Ala Gln  
70 75 80

. a Gln Ala Leu Ala Ala Gln Ala Ala Ala Ala Ala His Ala Ala Gln  
85 90 95

a His Arg Glu Arg Asn Glu Phe Pro Glu Asp Pro Glu Phe Glu Ala  
100 105 110

. l Val Arg Gln Ala Glu Leu Ala Ile Glu Arg Cys Ile Phe Pro Glu  
115 120 125

g Ile Tyr Gln Gly Ser Ser Gly Ser Tyr Phe Val Lys Asp Pro Gln  
130 135 140

y Arg Ile Ile Ala Val Phe Lys Pro Lys Asn Glu Glu Pro Tyr Gly  
5 150 155 160

s Leu Asn Pro Lys Trp Thr Lys Trp Leu Gln Lys Leu Cys Cys Pro  
165 170 175

s Cys Phe Gly Arg Asp Cys Leu Val Leu Asn Gln Gly Tyr Leu Ser  
180 185 190

u Ala Gly Ala Ser Leu Val Asp Gln Lys Leu Glu Leu Asn Ile Val  
195 200 205

s o Arg Thr Lys Val Val Tyr Leu Ala Ser Glu Thr Phe Asn Tyr Ser  
210 215 220

eolf-seql-S000001.txt

La	Ile	Asp	Arg	Val	Lys	Ser	Arg	Gly	Lys	Arg	Ile	Leu	Ala	Leu	Glu	Lys
25					230				235							240

al	Pro	Lys	Val	Gly	Gln	Arg	Phe	Asn	Arg	Ile	Gly	Leu	Pro	Pro	Lys
				245					250						255

al	Gly	Ser	Phe	Gln	Leu	Phe	Val	Glu	Gly	Tyr	Lys	Asp	Ala	Asp	Tyr
				260				265							270

ip	Leu	Arg	Arg	Phe	Glu	Ala	Glu	Pro	Leu	Pro	Glu	Asn	Thr	Asn	Arg
				275			280								285

.n	Leu	Leu	Leu	Gln	Phe	Glu	Arg	Leu	Val	Val	Leu	Asp	Tyr	Ile	Ile
				290		295					300				

dg	Asn	Thr	Asp	Arg	Gly	Asn	Asp	Asn	Trp	Leu	Ile	Lys	Tyr	Asp	Cys
15					310					315					320

eo	Met	Asp	Ser	Ser	Ser	Ser	Arg	Asp	Thr	Asp	Trp	Val	Val	Val	Lys
					325				330						335

eu	Pro	Val	Ile	Lys	Val	Ala	Ala	Ile	Asp	Asn	Gly	Leu	Ala	Phe	Pro
				340				345							350

eu	Lys	His	Pro	Asp	Ser	Trp	Arg	Ala	Tyr	Pro	Phe	Tyr	Trp	Ala	Trp
				355			360					365			

eu	Pro	Gln	Ala	Lys	Val	Pro	Phe	Ser	Gln	Glu	Ile	Lys	Asp	Leu	Ile
				370		375					380				

eu	Pro	Lys	Ile	Ser	Asp	Pro	Asn	Phe	Val	Lys	Asp	Leu	Glu	Glu	Asp
5					390				395						400

eu	Tyr	Glu	Leu	Phe	Lys	Lys	Asp	Pro	Gly	Phe	Asp	Arg	Gly	Gln	Phe
				405				410							415

es	Lys	Gln	Ile	Ala	Val	Met	Arg	Gly	Gln	Ile	Leu	Asn	Leu	Thr	Gln
				420				425							430

ea	Leu	Lys	Asp	Asn	Lys	Ser	Pro	Leu	His	Leu	Val	Gln	Met	Pro	Pro
				435				440							445

## eolf-seql-S000001.txt

al Ile Val Glu Thr Ala Arg Ser His Gln Arg Ser Ser Ser Glu Ser  
450 455 460

fr Thr Gln Ser Phe Gln Ser Arg Lys Pro Phe Phe Ser Trp Trp  
65 470 475

?10> 114  
?11> 213  
?12> PRT  
?13> Homo sapiens

!00> 114

et Ala Gln Glu Thr Asn Gln Thr Pro Gly Pro Met Leu Cys Ser Thr  
5 10 15

.y Cys Gly Phe Tyr Gly Asn Pro Arg Thr Asn Gly Met Cys Ser Val  
20 25 30

's Tyr Lys Glu His Leu Gln Arg Gln Gln Asn Ser Gly Arg Met Ser  
35 40 45

:o Met Gly Thr Ala Ser Gly Ser Asn Ser Pro Thr Ser Asp Ser Ala  
50 55 60

er Val Gln Arg Ala Asp Thr Ser Leu Asn Asn Cys Glu Gly Ala Ala  
70 75 80

.y Ser Thr Ser Glu Lys Ser Arg Asn Val Pro Val Ala Ala Leu Pro  
85 90 95

.l Thr Gln Gln Met Thr Glu Met Ser Ile Ser Arg Glu Asp Lys Ile  
100 105 110

.r Thr Pro Lys Thr Glu Val Ser Glu Pro Val Val Thr Gln Pro Ser  
115 120 125

:o Ser Val Ser Gln Pro Ser Thr Ser Gln Ser Glu Glu Lys Ala Pro  
130 135 140

u Leu Pro Lys Pro Lys Lys Asn Arg Cys Phe Met Cys Arg Lys Lys  
5 150 155 160

## eolf-seql-S000001.txt

al Gly Leu Thr Gly Phe Asp Cys Arg Cys Gly Asn Leu Phe Cys Gly  
165 170 175

eu His Arg Tyr Ser Asp Lys His Asn Cys Pro Tyr Asp Tyr Lys Ala  
180 185 190

lu Ala Ala Ala Lys Ile Arg Lys Glu Asn Pro Val Val Ala Glu  
195 200 205

/s Ile Gln Arg Ile  
210

?10> 115

?11> 323

?12> PRT

?13> Homo sapiens

?100> 115

st Asp Ser Lys Tyr Gln Cys Val Lys Leu Asn Asp Gly His Phe Met  
5 10 15

o Val Leu Gly Phe Gly Thr Tyr Ala Pro Ala Glu Val Pro Lys Ser  
20 25 30

/s Ala Leu Glu Ala Thr Lys Leu Ala Ile Glu Ala Gly Phe Arg His  
35 40 45

e Asp Ser Ala His Leu Tyr Asn Asn Glu Glu Gln Val Gly Leu Ala  
50 55 60

e Arg Ser Lys Ile Ala Asp Gly Ser Val Lys Arg Glu Asp Ile Phe  
70 75 80

r Thr Ser Lys Leu Trp Cys Asn Ser His Arg Pro Glu Leu Val Arg  
85 90 95

o Ala Leu Glu Arg Ser Leu Lys Asn Leu Gln Leu Asp Tyr Val Asp  
100 105 110

u Tyr Leu Ile His Phe Pro Val Ser Val Lys Pro Gly Glu Glu Val  
115 120 125

## eolf-seql-s000001.txt

e Pro Lys Asp Glu Asn Gly Lys Ile Leu Phe Asp Thr Val Asp Leu  
130 135 140

s Ala Thr Trp Glu Ala Val Glu Lys Cys Lys Asp Ala Gly Leu Ala  
5 150 155 160

s Ser Ile Gly Val Ser Asn Phe Asn Arg Arg Gln Leu Glu Met Ile  
165 170 175

u Asn Lys Pro Gly Leu Lys Tyr Lys Pro Val Cys Asn Gln Val Glu  
180 185 190

s His Pro Tyr Phe Asn Gln Arg Lys Leu Leu Asp Phe Cys Lys Ser  
195 200 205

s Asp Ile Val Leu Val Ala Tyr Ser Ala Leu Gly Ser His Arg Glu ...  
210 215 220

u Pro Trp Val Asp Pro Asn Ser Pro Val Leu Leu Glu Asp Pro Val  
5 230 235 240

u Cys Ala Leu Ala Lys Lys His Lys Arg Thr Pro Ala Leu Ile Ala  
245 250 255

u Arg Tyr Gln Leu Gln Arg Gly Val Val Val Leu Ala Lys Ser Tyr  
260 265 270

n Glu Gln Arg Ile Arg Gln Asn Val Gln Val Phe Glu Phe Gln Leu  
275 280 285

r Ser Glu Glu Met Lys Ala Ile Asp Gly Leu Asn Arg Asn Val Arg  
290 295 300

: Leu Thr Leu Asp Ile Phe Ala Gly Pro Pro Asn Tyr Pro Phe Ser  
; 310 315 320

> Glu Tyr

.0> 116  
.1> 164

## eolf-seql-S000001.txt

12&gt; PRT

13&gt; Homo sapiens

00&gt; 116

t Pro Cys Ser Glu Glu Thr Pro Ala Ile Ser Pro Ser Lys Arg Ala  
5 10 15

g Pro Ala Glu Val Gly Gly Met Gln Leu Arg Phe Ala Arg Leu Ser  
20 25 30

u His Ala Thr Ala Pro Thr Arg Gly Ser Ala Arg Ala Ala Gly Tyr  
35 40 45

p Leu Tyr Ser Ala Tyr Asp Tyr Thr Ile Pro Pro Met Glu Lys Ala  
50 55 60

l Val Lys Thr Asp Ile Gln Ile Ala Leu Pro Ser Gly Cys Tyr Gly  
70 75 80

g Val Ala Pro Arg Ser Gly Leu Ala Ala Lys His Phe Ile Asp Val  
85 90 95

y Ala Gly Val Ile Asp Glu Asp Tyr Arg Gly Asn Val Gly Val Val  
100 105 110

u Phe Asn Phe Gly Lys Glu Lys Phe Glu Val Lys Lys Gly Asp Arg  
115 120 125

e Ala Gln Leu Ile Cys Glu Arg Ile Phe Tyr Pro Glu Ile Glu Glu  
130 135 140

l Gln Ala Leu Asp Asp Thr Glu Arg Gly Ser Gly Gly Phe Gly Ser  
5 150 155 160

r Gly Lys Asn

10&gt; 117

11&gt; 969

12&gt; PRT

13&gt; Homo sapiens

00&gt; 117

## eolf-seql-S000001.txt

t Pro Pro Arg Ala Pro Pro Ala Pro Gly Pro Arg Pro Pro Pro Arg  
5 10 15

a Ala Ala Ala Thr Asp Thr Ala Ala Gly Ala Gly Gly Ala Gly Gly  
20 25 30

a Gly Gly Ala Gly Gly Pro Gly Phe Arg Pro Leu Ala Pro Arg Pro  
35 40 45

p Arg Trp Leu Leu Leu Leu Ala Leu Pro Ala Ala Cys Ser Ala Pro  
50 55 60

o Pro Arg Pro Val Tyr Thr Asn His Trp Ala Val Gln Val Leu Gly  
70 75 80

y Pro Ala Glu Ala Asp Arg Val Ala Ala Ala His Gly Tyr Leu Asn . . .  
85 90 95

u Gly Gln Ile Gly Asn Leu Glu Asp Tyr Tyr His Phe Tyr His Ser  
100 105 110

s Thr Phe Lys Arg Ser Thr Leu Ser Ser Arg Gly Pro His Thr Phe  
115 120 125

u Arg Met Asp Pro Gln Val Lys Trp Leu Gln Gln Glu Val Lys  
130 135 140

g Arg Val Lys Arg Gln Val Arg Ser Asp Pro Gln Ala Leu Tyr Phe  
5 150 155 160

n Asp Pro Ile Trp Ser Asn Met Trp Tyr Leu His Cys Gly Asp Lys  
165 170 175

n Ser Arg Cys Arg Ser Glu Met Asn Val Gln Ala Ala Trp Lys Arg  
180 185 190

y Tyr Thr Gly Lys Asn Val Val Val Thr Ile Leu Asp Asp Gly Ile  
195 200 205

u Arg Asn His Pro Asp Leu Ala Pro Asn Tyr Asp Ser Tyr Ala Ser  
210 215 220

## eolf-seql-S000001.txt

r Asp Val Asn Gly Asn Asp Tyr Asp Pro Ser Pro Arg Tyr Asp Ala  
25 230 235 240

er Asn Glu Asn Lys His Gly Thr Arg Cys Ala Gly Glu Val Ala Ala  
245 250 255

er Ala Asn Asn Ser Tyr Cys Ile Val Gly Ile Ala Tyr Asn Ala Lys  
260 265 270

le Gly Gly Ile Arg Met Leu Asp Gly Asp Val Thr Asp Val Val Glu  
275 280 285

.a Lys Ser Leu Gly Ile Arg Pro Asn Tyr Ile Asp Ile Tyr Ser Ala  
290 295 300

er Trp Gly Pro Asp Asp Gly Lys Thr Val Asp Gly Pro Gly Arg  
15 310 315 320

u Ala Lys Gln Ala Phe Glu Tyr Gly Ile Lys Lys Gly Arg Gln Gly  
325 330 335

u Gly Ser Ile Phe Val Trp Ala Ser Gly Asn Gly Gly Arg Glu Gly  
340 345 350

p Tyr Cys Ser Cys Asp Gly Tyr Thr Asn Ser Ile Tyr Thr Ile Ser  
355 360 365

l Ser Ser Ala Thr Glu Asn Gly Tyr Lys Pro Trp Tyr Leu Glu Glu  
370 375 380

s Ala Ser Thr Leu Ala Thr Thr Tyr Ser Ser Gly Ala Phe Tyr Glu  
5 390 395 400

g Lys Ile Val Thr Thr Asp Leu Arg Gln Arg Cys Thr Asp Gly His  
405 410 415

r Gly Thr Ser Val Ser Ala Pro Met Val Ala Gly Ile Ile Ala Leu  
420 425 430

a Leu Glu Ala Asn Ser Gln Leu Thr Trp Arg Asp Val Gln His Leu

## eolf-seql-s000001.txt

435

440

445

u Val Lys Thr Ser Arg Pro Ala His Leu Lys Ala Ser Asp Trp Lys  
450 455 460

l Asn Gly Ala Gly His Lys Val Ser His Phe Tyr Gly Phe Gly Leu  
45 470 475 480

l Asp Ala Glu Ala Leu Val Val Glu Ala Lys Lys Trp Thr Ala Val  
485 490 495

o Ser Gln His Met Cys Val Ala Ala Ser Asp Lys Arg Pro Arg Ser  
500 505 510

e Pro Leu Val Gln Val Leu Arg Thr Thr Ala Leu Thr Ser Ala Cys  
515 520 525

a Glu His Ser Asp Gln Arg Val Val Tyr Leu Glu His Val Val Val  
530 535 540

g Thr Ser Ile Ser His Pro Arg Arg Gly Asp Leu Gln Ile Tyr Leu  
5 550 555 560

l Ser Pro Ser Gly Thr Lys Ser Gln Leu Leu Ala Lys Arg Leu Leu  
565 570 575

p Leu Ser Asn Glu Gly Phe Thr Asn Trp Glu Phe Met Thr Val His  
580 585 590

s Trp Gly Glu Lys Ala Glu Gly Gln Trp Thr Leu Glu Ile Gln Asp  
595 600 605

u Pro Ser Gln Val Arg Asn Pro Glu Lys Gln Gly Lys Leu Lys Glu  
610 615 620

p Ser Leu Ile Leu Tyr Gly Thr Ala Glu His Pro Tyr His Thr Phe  
5 630 635 640

c Ala His Gln Ser Arg Ser Arg Met Leu Glu Leu Ser Ala Pro Glu  
645 650 655

eolf-seql-S000001.txt  
eu Glu Pro Pro Lys Ala Ala Leu Ser Pro Ser Gln Val Glu Val Pro  
660 665 670  
  
.u Asp Glu Glu Asp Tyr Thr Ala Gln Ser Thr Pro Gly Ser Ala Asn  
675 680 685  
  
.e Leu Gln Thr Ser Val Cys His Pro Glu Cys Gly Asp Lys Gly Cys  
690 695 700  
  
.p Gly Pro Asn Ala Asp Gln Cys Leu Asn Cys Val His Phe Ser Leu  
715 710 715 720  
  
.y Ser Val Lys Thr Ser Arg Lys Cys Val Ser Val Cys Pro Leu Gly  
725 730 735  
  
.r Phe Gly Asp Thr Ala Ala Arg Arg Cys Arg Arg Cys His Lys Gly  
740 745 750  
  
.s Glu Thr Cys Ser Ser Arg Ala Ala Thr Gln Cys Leu Ser Cys Arg  
755 760 765  
  
.g Gly Phe Tyr His His Gln Glu Met Asn Thr Cys Val Thr Leu Cys  
770 775 780  
  
.o Ala Gly Phe Tyr Ala Asp Glu Ser Gln Lys Asn Cys Leu Lys Cys  
790 795 800  
  
.s Pro Ser Cys Lys Lys Cys Val Asp Glu Pro Glu Lys Cys Thr Val  
805 810 815  
  
.s Lys Glu Gly Phe Ser Leu Ala Arg Gly Ser Cys Ile Pro Asp Cys  
820 825 830  
  
.u Pro Gly Thr Tyr Phe Asp Ser Glu Leu Ile Arg Cys Gly Glu Cys  
835 840 845  
  
.s His Thr Cys Gly Thr Cys Val Gly Pro Gly Arg Glu Glu Cys Ile  
850 855 860  
  
.s Cys Ala Lys Asn Phe His Phe His Asp Trp Lys Cys Val Pro Ala  
870 875 880

## eolf-seql-S000001.txt

's Gly Glu Gly Phe Tyr Pro Glu Glu Met Pro Gly Leu Pro His Lys  
885 890 895

al Cys Arg Arg Cys Asp Glu Asn Cys Leu Ser Cys Ala Gly Ser Ser  
900 905 910

:g Asn Cys Ser Arg Cys Lys Thr Gly Phe Thr Gln Leu Gly Thr Ser  
915 920 925

's Ile Thr Asn His Thr Cys Ser Asn Ala Asp Glu Thr Phe Cys Glu  
930 935 940

:t Val Lys Ser Asn Arg Leu Cys Glu Arg Lys Leu Phe Ile Gln Phe  
5 950 955 960

's Cys Arg Thr Cys Leu Leu Ala Gly  
965

10> 118  
11> 683  
12> PRT  
13> Homo sapiens

00> 118

t Ala Leu Phe Val Arg Leu Leu Ala Leu Ala Leu Ala Leu  
5 10 15

y Pro Ala Ala Thr Leu Ala Gly Pro Ala Lys Ser Pro Tyr Gln Leu  
20 25 30

l Leu Gln His Ser Arg Leu Arg Gly Arg Gln His Gly Pro Asn Val  
35 40 45

s Ala Val Gln Lys Val Ile Gly Thr Asn Arg Lys Tyr Phe Thr Asn  
50 55 60

s Lys Gln Trp Tyr Gln Arg Lys Ile Cys Gly Lys Ser Thr Val Ile  
70 75 80

r Tyr Glu Cys Cys Pro Gly Tyr Glu Lys Val Pro Gly Glu Lys Gly  
85 90 95

## eolf-seql-S000001.txt

/s Pro Ala Ala Leu Pro Leu Ser Asn Leu Tyr Glu Thr Leu Gly Val  
100 105 110

al Gly Ser Thr Thr Gln Leu Tyr Thr Asp Arg Thr Glu Lys Leu  
115 120 125

:g Pro Glu Met Glu Gly Pro Gly Ser Phe Thr Ile Phe Ala Pro Ser  
130 135 140

:n Glu Ala Trp Ala Ser Leu Pro Ala Glu Val Leu Asp Ser Leu Val  
15 150 155 160

:r Asn Val Asn Ile Glu Leu Leu Asn Ala Leu Arg Tyr His Met Val  
165 170 175

.y Arg Arg Val Leu Thr Asp Glu Leu Lys His Gly Met Thr Leu Thr  
180 185 190

:r Met Tyr Gln Asn Ser Asn Ile Gln Ile His His Tyr Pro Asn Gly  
195 200 205

e Val Thr Val Asn Cys Ala Arg Leu Leu Lys Ala Asp His His Ala  
210 215 220

r Asn Gly Val Val His Leu Ile Asp Lys Val Ile Ser Thr Ile Thr  
5 230 235 240

n Asn Ile Gln Gln Ile Ile Glu Ile Glu Asp Thr Phe Glu Thr Leu  
245 250 255

g Ala Ala Val Ala Ala Ser Gly Leu Asn Thr Met Leu Glu Gly Asn  
260 265 270

y Gln Tyr Thr Leu Leu Ala Pro Thr Asn Glu Ala Phe Glu Lys Ile  
275 280 285

o Ser Glu Thr Leu Asn Arg Ile Leu Gly Asp Pro Glu Ala Leu Arg  
290 295 300

p Leu Leu Asn Asn His Ile Leu Lys Ser Ala Met Cys Ala Glu Ala  
5 310 315 320

## eolf-seql-S000001.txt

le Val Ala Gly Leu Ser Val Glu Thr Leu Glu Gly Thr Thr Leu Glu  
325 330 335

al Gly Cys Ser Gly Asp Met Leu Thr Ile Asn Gly Lys Ala Ile Ile  
340 345 350

er Asn Lys Asp Ile Leu Ala Thr Asn Gly Val Ile His Tyr Ile Asp  
355 360 365

lu Leu Leu Ile Pro Asp Ser Ala Lys Thr Leu Phe Glu Leu Ala Ala  
370 375 380

lu Ser Asp Val Ser Thr Ala Ile Asp Leu Phe Arg Gln Ala Gly Leu  
385 390 395 400

ly Asn His Leu Ser Gly Ser Glu Arg Leu Thr Leu Leu Ala Pro Leu  
405 410 415

in Ser Val Phe Lys Asp Gly Thr Pro Pro Ile Asp Ala His Thr Arg  
420 425 430

in Leu Leu Arg Asn His Ile Ile Lys Asp Gln Leu Ala Ser Lys Tyr  
435 440 445

lu Tyr His Gly Gln Thr Leu Glu Thr Leu Gly Gly Lys Lys Leu Arg  
450 455 460

l Phe Val Tyr Arg Asn Ser Leu Cys Ile Glu Asn Ser Cys Ile Ala  
455 470 475 480

a His Asp Lys Arg Gly Arg Tyr Gly Thr Leu Phe Thr Met Asp Arg  
485 490 495

l Leu Thr Pro Pro Met Gly Thr Val Met Asp Val Leu Lys Gly Asp  
500 505 510

n Arg Phe Ser Met Leu Val Ala Ala Ile Gln Ser Ala Gly Leu Thr  
515 520 525

u Thr Leu Asn Arg Glu Gly Val Tyr Thr Val Phe Ala Pro Thr Asn

## eolf-seql-S000001.txt

530 535 540

lu Ala Phe Arg Ala Leu Pro Pro Arg Glu Arg Ser Arg Leu Leu Gly  
15 550 555 560

sp Ala Lys Glu Leu Ala Asn Ile Leu Lys Tyr His Ile Gly Asp Glu  
565 570 575

.e Leu Val Ser Gly Gly Ile Gly Ala Leu Val Arg Leu Lys Ser Leu  
580 585 590

.n Gly Asp Lys Leu Glu Val Ser Leu Lys Asn Asn Val Val Ser Val  
595 600 605

:n Lys Glu Pro Val Ala Glu Pro Asp Ile Met Ala Thr Asn Gly Val  
610 615 620

:l His Val Ile Thr Asn Val Leu Gln Pro Pro Ala Asn Arg Pro Gln  
615 630 635 640

.u Arg Gly Asp Glu Leu Ala Asp Ser Ala Leu Glu Ile Phe Lys Gln  
645 650 655

.a Ser Ala Phe Ser Arg Ala Ser Gln Arg Ser Val Arg Leu Ala Pro  
660 665 670

.l Tyr Gln Lys Leu Leu Glu Arg Met Lys His  
675 680

10&gt; 119

11&gt; 381

12&gt; PRT

13&gt; Homo sapiens

00&gt; 119

t Glu Ser Gly Ser Thr Ala Ala Ser Glu Glu Ala Arg Ser Leu Arg  
5 10 15

u Cys Glu Leu Tyr Val Gln Lys His Asn Ile Gln Ala Leu Leu Lys  
20 25 30

p Ser Ile Val Gln Leu Cys Thr Ala Arg Pro Glu Arg Pro Met Ala

## eolf-seql-S000001.txt

35

40

45

ie Leu Arg Glu Tyr Phe Glu Arg Leu Glu Lys Glu Glu Ala Lys Gln  
50 55 60

le Gln Asn Leu Gln Lys Ala Gly Thr Arg Thr Asp Ser Arg Glu Asp  
; 70 75 80

lu Ile Ser Pro Pro Pro Asn Pro Val Val Lys Gly Arg Arg Arg  
85 90 95

ng Gly Ala Ile Ser Ala Glu Val Tyr Thr Glu Glu Asp Ala Ala Ser  
100 105 110

ur Val Arg Lys Val Ile Pro Lys Asp Tyr Lys Thr Met Ala Ala Leu  
115 120 125

a Lys Ala Ile Glu Lys Asn Val Leu Phe Ser His Leu Asp Asp Asn  
130 135 140

u Arg Ser Asp Ile Phe Asp Ala Met Phe Ser Val Ser Phe Ile Ala  
5 150 155 160

y Glu Thr Val Ile Gln Gln Gly Asp Glu Gly Asp Asn Phe Tyr Val  
165 170 175

e Asp Gln Gly Glu Thr Asp Val Tyr Val Asn Asn Glu Trp Ala Thr  
180 185 190

r Val Gly Glu Gly Ser Phe Gly Glu Leu Ala Leu Ile Tyr Gly  
195 200 205

r Pro Arg Ala Ala Thr Val Lys Ala Lys Thr Asn Val Lys Leu Trp  
210 215 220

y Ile Asp Arg Asp Ser Tyr Arg Arg Ile Leu Met Gly Ser Thr Leu  
5 230 235 240

g Lys Arg Lys Met Tyr Glu Glu Phe Leu Ser Lys Val Ser Ile Leu  
245 250 255

eolf-seql-S000001.txt  
lu Ser Leu Asp Lys Trp Glu Arg Leu Thr Val Ala Asp Ala Leu Glu  
260 265 270  
  
eo Val Gln Phe Glu Asp Gly Gln Lys Ile Val Val Gln Gly Glu Pro  
275 280 285  
  
ly Asp Glu Phe Phe Ile Ile Leu Glu Gly Ser Ala Ala Val Leu Gln  
290 295 300  
  
eg Arg Ser Glu Asn Glu Glu Phe Val Glu Val Gly Arg Leu Gly Pro  
315 320  
  
er Asp Tyr Phe Gly Glu Ile Ala Leu Leu Met Asn Arg Pro Arg Ala  
325 330 335  
  
a Thr Val Val Ala Arg Gly Pro Leu Lys Cys Val Lys Leu Asp Arg  
340 345 350  
  
eo Arg Phe Glu Arg Val Leu Glu Pro Cys Ser Asp Ile Leu Lys Arg  
355 360 365  
  
in Ile Gln Gln Tyr Asn Ser Phe Val Ser Leu Ser Val  
370 375 380  
  
:10> 120  
:11> 245  
:12> PRT  
:13> Homo sapiens  
  
00> 120  
  
t Asn Gly Arg Ala Asp Phe Arg Glu Pro Asn Ala Glu Val Pro Arg  
5 10 15  
  
o Ile Pro His Ile Gly Pro Asp Tyr Ile Pro Thr Glu Glu Glu Arg  
20 25 30  
  
g Val Phe Ala Glu Cys Asn Asp Glu Ser Phe Trp Phe Arg Ser Val  
35 40 45  
  
o Leu Ala Ala Thr Ser Met Leu Ile Thr Gln Gly Leu Ile Ser Lys  
50 55 60

eolf-seql-S000001.txt  
y Ile Leu Ser Ser His Pro Lys Tyr Gly Ser Ile Pro Lys Leu Ile  
; 70 75 80  
  
eu Ala Cys Ile Met Gly Tyr Phe Ala Gly Lys Leu Ser Tyr Val Lys  
85 90 95  
  
ir Cys Gln Glu Lys Phe Lys Lys Leu Glu Asn Ser Pro Leu Gly Glu  
100 105 110  
  
.a Leu Arg Ser Gly Gln Ala Arg Arg Ser Ser Pro Pro Gly His Tyr  
115 120 125  
  
'r Gln Lys Ser Lys Tyr Asp Ser Ser Val Ser Gly Gln Ser Ser Phe  
130 135 140  
  
.l Thr Ser Pro Ala Ala Asp Asn Ile Glu Met Leu Pro His Tyr Glu  
5 150 155 160  
  
.o Ile Pro Phe Ser Ser Ser Met Asn Glu Ser Ala Pro Thr Gly Ile  
165 170 175  
  
.r Asp His Ile Val Gln Gly Pro Asp Pro Asn Leu Glu Glu Ser Pro  
180 185 190  
  
.s Arg Lys Asn Ile Thr Tyr Glu Glu Leu Arg Asn Lys Asn Arg Glu  
195 200 205  
  
.r Tyr Glu Val Ser Leu Thr Gln Lys Thr Asp Pro Ser Val Arg Pro  
210 215 220  
  
.t His Glu Arg Val Pro Lys Lys Glu Val Lys Val Asn Lys Tyr Gly  
5 230 235 240  
  
.p Thr Trp Asp Glu  
245  
  
10> 121  
11> 359  
12> PRT  
13> Homo sapiens  
  
00> 121

eolf-seql-S000001.txt  
et Ser Thr Arg Ala Lys Lys Leu Arg Arg Ile Trp Arg Ile Leu Glu  
5 10 15

Iu Glu Glu Ser Val Ala Gly Ala Val Gln Thr Leu Leu Leu Arg Ser  
20 25 30

.n Glu Gly Gly Val Thr Ser Ala Ala Ala Ser Thr Leu Ser Glu Pro  
35 40 45

:o Arg Arg Thr Gln Glu Ser Arg Thr Arg Thr Arg Ala Leu Gly Leu  
50 55 60

:o Thr Leu Pro Met Glu Lys Leu Ala Ala Ser Thr Glu Pro Gln Gly  
; 70 75 80

:o Arg Pro Val Leu Gly Arg Glu Ser Val Gln Val Pro Asp Asp Gln  
85 90 95

:p Phe Arg Ser Phe Arg Ser Glu Cys Glu Ala Glu Val Gly Trp Asn  
100 105 110

:u Thr Tyr Ser Arg Ala Gly Val Ser Val Trp Val Gln Ala Val Glu  
115 120 125

:t Asp Arg Thr Leu His Lys Ile Lys Cys Arg Met Glu Cys Cys Asp  
130 135 140

:l Pro Ala Glu Thr Leu Tyr Asp Val Leu His Asp Ile Glu Tyr Arg  
5 150 155 160

:s Lys Trp Asp Ser Asn Val Ile Glu Thr Phe Asp Ile Ala Arg Leu  
165 170 175

:r Val Asn Ala Asp Val Gly Tyr Tyr Ser Trp Arg Cys Pro Lys Pro  
180 185 190

:u Lys Asn Arg Asp Val Ile Thr Leu Arg Ser Trp Leu Pro Met Gly  
195 200 205

:a Asp Tyr Ile Ile Met Asn Tyr Ser Val Lys His Pro Lys Tyr Pro  
210 215 220

## eolf-seql-S000001.txt

to Arg Lys Asp Leu Val Arg Ala Val Ser Ile Gln Thr Gly Tyr Leu  
25 230 235 240

.e Gln Ser Thr Gly Pro Lys Ser Cys Val Ile Thr Tyr Leu Ala Gln  
245 250 255

.l Asp Pro Lys Gly Ser Leu Pro Lys Trp Val Val Asn Lys Ser Ser  
260 265 270

.n Phe Leu Ala Pro Lys Ala Met Lys Lys Met Tyr Lys Ala Cys Leu  
275 280 285

's Tyr Pro Glu Trp Lys Gln Lys His Leu Pro His Phe Lys Pro Trp  
290 295 300

.u His Pro Glu Gln Ser Pro Leu Pro Ser Leu Ala Leu Ser Glu Leu  
315 310 315 320

.r Val Gln His Ala Asp Ser Leu Glu Asn Ile Asp Glu Ser Ala Val  
325 330 335

a Glu Ser Arg Glu Glu Arg Met Gly Gly Ala Gly Gly Glu Gly Ser  
340 345 350

p Asp Asp Thr Ser Leu Thr  
355

10> 122  
11> 199  
12> PRT  
13> Homo sapiens

00> 122

t Ser Ser Gly Asn Ala Lys Ile Gly His Pro Ala Pro Asn Phe Lys  
5 10 15

a Thr Ala Val Met Pro Asp Gly Gln Phe Lys Asp Ile Ser Leu Ser  
20 25 30

p Tyr Lys Gly Lys Tyr Val Val Phe Phe Tyr Pro Leu Asp Phe  
35 40 45

## eolf-seql-S000001.txt

r Phe Val Cys Pro Thr Glu Ile Ile Ala Phe Ser Asp Arg Ala Glu  
50 55 60

u Phe Lys Lys Leu Asn Cys Gln Val Ile Gly Ala Ser Val Asp Ser  
70 75 80

s Phe Cys His Leu Ala Trp Val Asn Thr Pro Lys Lys Gln Gly Gly  
85 90 95

u Gly Pro Met Asn Ile Pro Leu Val Ser Asp Pro Lys Arg Thr Ile  
100 105 110

a Gln Asp Tyr Gly Val Leu Lys Ala Asp Glu Gly Ile Ser Phe Arg  
115 120 125

y Leu Phe Ile Ile Asp Asp Lys Gly Ile Leu Arg Gln Ile Thr Val  
130 135 140

n Asp Leu Pro Val Gly Arg Ser Val Asp Glu Thr Leu Arg Leu Val  
5 150 155 160

n Ala Phe Gln Phe Thr Asp Lys His Gly Glu Val Cys Pro Ala Gly  
165 170 175

p Lys Pro Gly Ser Asp Thr Ile Lys Pro Asp Val Gln Lys Ser Lys  
180 185 190

u Tyr Phe Ser Lys Gln Lys  
195

10> 123  
11> 219  
12> PRT  
13> Homo sapiens

00> 123

: Ser Gly Leu Ser Gly Pro Pro Ala Arg Arg Gly Pro Phe Pro Leu  
5 10 15

^ Leu Leu Leu Leu Phe Leu Leu Gly Pro Arg Leu Val Leu Ala Ile  
20 25 30

## eolf-seql-S000001.txt

r Phe His Leu Pro Ile Asn Ser Arg Lys Cys Leu Arg Glu Glu Ile  
35 40 45

s Lys Asp Leu Leu Val Thr Gly Ala Tyr Glu Ile Ser Asp Gln Ser  
50 55 60

y Gly Ala Gly Gly Leu Arg Ser His Leu Arg Ile Thr Asp Ser Ala  
70 75 80

y His Ile Leu Tyr Ser Lys Glu Asp Ala Thr Lys Gly Lys Phe Ala  
85 90 95

e Thr Thr Glu Asp Tyr Asp Met Phe Glu Val Cys Phe Glu Ser Lys  
100 105 110

y Thr Gly Arg Ile Pro Asp Gln Leu Val Ile Leu Asp Met Lys His  
115 120 125

y Val Glu Ala Lys Asn Tyr Glu Glu Ile Ala Lys Val Glu Lys Leu  
130 135 140

s Pro Leu Glu Val Glu Leu Arg Arg Leu Glu Asp Leu Ser Glu Ser  
5 150 155 160

e Val Asn Asp Phe Ala Tyr Met Lys Lys Arg Glu Glu Glu Met Arg  
165 170 175

> Thr Asn Glu Ser Thr Asn Thr Arg Val Leu Tyr Phe Ser Ile Phe  
180 185 190

: Met Phe Cys Leu Ile Gly Leu Ala Thr Trp Gln Val Phe Tyr Leu  
195 200 205

; Arg Phe Phe Lys Ala Lys Lys Leu Ile Glu  
210 215

.0> 124

.1> 1575

.2> PRT

.3> Homo sapiens

.0> 124

## eolf-seql-S000001.txt

t Pro His Glu Glu Leu Pro Ser Leu Gln Arg Pro Arg Tyr Gly Ser  
5 10 15

e Val Asp Asp Glu Arg Leu Ser Ala Glu Glu Met Asp Glu Arg Arg  
20 25 30

g Gln Asn Ile Ala Tyr Glu Tyr Leu Cys His Leu Glu Glu Ala Lys  
35 40 45

g Trp Met Glu Val Cys Leu Val Glu Glu Leu Pro Pro Thr Thr Glu  
50 55 60

u Glu Glu Gly Leu Arg Asn Gly Val Tyr Leu Ala Lys Leu Ala Lys  
70 75 80

e Phe Ala Pro Lys Met Val Ser Glu Lys Lys Ile Tyr Asp Val Glu  
85 90 95

n Thr Arg Tyr Lys Lys Ser Gly Leu His Phe Arg His Thr Asp Asn  
100 105 110

r Val Gln Trp Leu Arg Ala Met Glu Ser Ile Gly Leu Pro Lys Ile  
115 120 125

e Tyr Pro Glu Thr Thr Asp Val Tyr Asp Arg Lys Asn Ile Pro Arg  
130 135 140

: Ile Tyr Cys Ile His Ala Leu Ser Leu Tyr Leu Phe Lys Leu Gly  
150 155 160

e Ala Pro Gln Ile Gln Asp Leu Leu Gly Lys Val Asp Phe Thr Glu  
165 170 175

: Glu Ile Ser Asn Met Arg Lys Glu Leu Glu Lys Tyr Gly Ile Gln  
180 185 190

: Pro Ser Phe Ser Lys Ile Gly Gly Ile Leu Ala Asn Glu Leu Ser  
195 200 205

. Asp Glu Ala Ala Leu His Ala Ala Val Ile Ala Ile Asn Glu Ala  
210 215 220

## eolf-seql-S000001.txt

al Glu Lys Gly Ile Ala Glu Gln Thr Val Val Thr Leu Arg Asn Pro  
25 230 235 240

sn Ala Val Leu Thr Leu Val Asp Asp Asn Leu Ala Pro Glu Tyr Gln  
245 250 255

ys Glu Leu Trp Asp Ala Lys Lys Lys Glu Glu Asn Ala Arg Leu  
260 265 270

ys Asn Ser Cys Ile Ser Glu Glu Glu Arg Asp Ala Tyr Glu Glu Leu  
275 280 285

eu Thr Gln Ala Glu Ile Gln Gly Asn Ile Asn Lys Val Asn Arg Gln  
290 295 300

la Ala Val Asp His Ile Asn Ala Val Ile Pro Glu Gly Asp Pro Glu  
305 310 315 320

sn Thr Leu Leu Ala Leu Lys Lys Pro Glu Ala Gln Leu Pro Ala Val  
325 330 335

yr Pro Phe Ala Ala Ala Met Tyr Gln Asn Glu Leu Phe Asn Leu Gln  
340 345 350

ys Gln Asn Thr Met Asn Tyr Leu Ala His Glu Glu Leu Leu Ile Ala  
355 360 365

al Glu Met Leu Ser Ala Val Ala Leu Leu Asn Gln Ala Leu Glu Ser  
370 375 380

sn Asp Leu Val Ser Val Gln Asn Gln Leu Arg Ser Pro Ala Ile Gly  
385 390 395 400

eu Asn Asn Leu Asp Lys Ala Tyr Val Glu Arg Tyr Ala Asn Thr Leu  
405 410 415

eu Ser Val Lys Leu Glu Val Leu Ser Gln Gly Gln Asp Asn Leu Ser  
420 425 430

ip Asn Glu Ile Gln Asn Cys Ile Asp Met Val Asn Ala Gln Ile Gln

## eolf-seql-S000001.txt

435

440

445

lu Glu Asn Asp Arg Val Val Ala Val Gly Tyr Ile Asn Glu Ala Ile  
450 455 460

sp Glu Gly Asn Pro Leu Arg Thr Leu Glu Thr Leu Leu Leu Pro Thr  
65 470 475 480

la Asn Ile Ser Asp Val Asp Pro Ala His Ala Gln His Tyr Gln Asp  
485 490 495

al Leu Tyr His Ala Lys Ser Gln Lys Leu Gly Asp Ser Glu Ser Val  
500 505 510

er Lys Val Leu Trp Leu Asp Glu Ile Gln Gln Ala Val Asp Glu Ala  
515 520 525

sn Val Asp Glu Asp Arg Ala Lys Gln Trp Val Thr Leu Val Val Asp  
530 535 540

al Asn Gln Cys Leu Glu Gly Lys Lys Ser Ser Asp Ile Leu Ser Val  
45 550 555 560

eu Lys Ser Ser Thr Ser Asn Ala Asn Asp Ile Ile Pro Glu Cys Ala  
565 570 575

sp Lys Tyr Tyr Asp Ala Leu Val Lys Ala Lys Glu Leu Lys Ser Glu  
580 585 590

tg Val Ser Ser Asp Gly Ser Trp Leu Lys Leu Asn Leu His Lys Lys  
595 600 605

'r Asp Tyr Tyr Tyr Asn Thr Asp Ser Lys Glu Ser Ser Trp Val Thr  
610 615 620

:o Glu Ser Cys Phe Tyr Lys Glu Ser Trp Leu Thr Gly Lys Glu Ile  
65 630 635 640

.u Asp Ile Ile Glu Glu Val Thr Val Gly Tyr Ile Arg Glu Asn Ile  
645 650 655

eolf-seql-S000001.txt

rp Ser Ala Ser Glu Glu Leu Leu Leu Arg Phe Gln Ala Thr Ser Ser  
660 665 670

ly Pro Ile Leu Arg Glu Glu Phe Glu Ala Arg Lys Ser Phe Leu His  
675 680 685

lu Gln Glu Glu Asn Val Val Lys Ile Gln Ala Phe Trp Lys Gly Tyr  
690 695 700

/s Gln Arg Lys Glu Tyr Met His Arg Arg Gln Thr Phe Ile Asp Asn  
705 710 715 720

ir Asp Ser Val Val Lys Ile Gln Ser Trp Phe Arg Met Ala Thr Ala  
725 730 735

ng Lys Ser Tyr Leu Ser Arg Leu Gln Tyr Phe Arg Asp His Asn Asn  
740 745 750

.u Ile Val Lys Ile Gln Ser Leu Leu Arg Ala Asn Lys Ala Arg Asp  
755 760 765

ip Tyr Lys Thr Leu Val Gly Ser Glu Asn Pro Pro Leu Thr Val Ile  
770 775 780

ng Lys Phe Val Tyr Leu Leu Asp Gln Ser Asp Leu Asp Phe Gln Glu  
785 790 795 800

.u Leu Glu Val Ala Arg Leu Arg Glu Glu Val Val Thr Lys Ile Arg  
805 810 815

a Asn Gln Gln Leu Glu Lys Asp Leu Asn Leu Met Asp Ile Lys Ile  
820 825 830

y Leu Leu Val Lys Asn Arg Ile Thr Leu Glu Asp Val Ile Ser His  
835 840 845

r Lys Lys Leu Asn Lys Lys Lys Gly Gly Glu Met Glu Ile Leu Asn  
850 855 860

n Thr Asp Asn Gln Gly Ile Lys Ser Leu Ser Lys Glu Arg Arg Lys  
875 880

## eolf-seql-S000001.txt

r Leu Glu Thr Tyr Gln Gln Leu Phe Tyr Leu Leu Gln Thr Asn Pro  
885 890 895

u Tyr Leu Ala Lys Leu Ile Phe Gln Met Pro Gln Asn Lys Ser Thr  
900 905 910

s Phe Met Asp Thr Val Ile Phe Thr Leu Tyr Asn Tyr Ala Ser Asn  
915 920 925

n Arg Glu Glu Tyr Leu Leu Leu Lys Leu Phe Lys Thr Ala Leu Glu  
930 935 940

u Glu Ile Lys Ser Lys Val Asp Gln Val Gln Asp Ile Val Thr Gly  
5 950 955 960

n Pro Thr Val Ile Lys Met Val Val Ser Phe Asn Arg Gly Ala Arg  
965 970 975

y Gln Asn Thr Leu Arg Gln Leu Leu Ala Pro Val Val Lys Glu Ile  
980 985 990

e Asp Asp Lys Ser Leu Ile Ile Asn Thr Asn Pro Val Glu Val Tyr  
995 1000 1005

s Ala Trp Val Asn Gln Leu Glu Thr Gln Thr Gly Glu Ala Ser  
1010 1015 1020

s Leu Pro Tyr Asp Val Thr Thr Glu Gln Ala Leu Thr Tyr Pro  
1025 1030 1035

i Val Lys Asn Lys Leu Glu Ala Ser Ile Glu Asn Leu Arg Arg  
1040 1045 1050

. Thr Asp Lys Val Leu Asn Ser Ile Ile Ser Ser Leu Asp Leu  
1055 1060 1065

i Pro Tyr Gly Leu Arg Tyr Ile Ala Lys Val Leu Lys Asn Ser  
1070 1075 1080

: His Glu Lys Phe Pro Asp Ala Thr Glu Asp Glu Leu Leu Lys  
1085 1090 1095

## eolf-seql-S000001.txt

le Val Gly Asn Leu Leu Tyr Tyr Arg Tyr Met Asn Pro Ala Ile  
1100 1105 1110

al Ala Pro Asp Gly Phe Asp Ile Ile Asp Met Thr Ala Gly Gly  
1115 1120 1125

ln Ile Asn Ser Asp Gln Arg Arg Asn Leu Gly Ser Val Ala Lys  
1130 1135 1140

al Leu Gln His Ala Ala Ser Asn Lys Leu Phe Glu Gly Glu Asn  
1145 1150 1155

lu His Leu Ser Ser Met Asn Asn Tyr Leu Ser Glu Thr Tyr Gln  
1160 1165 1170

lu Phe Arg Lys Tyr Phe Lys Glu Ala Cys Asn Val Pro Glu Pro  
1175 1180 1185

lu Glu Lys Phe Asn Met Asp Lys Tyr Thr Asp Leu Val Thr Val  
1190 1195 1200

er Lys Pro Val Ile Tyr Ile Ser Ile Glu Glu Ile Ile Ser Thr  
1205 1210 1215

is Ser Leu Leu Leu Glu His Gln Asp Ala Ile Ala Pro Glu Lys  
1220 1225 1230

sn Asp Leu Leu Ser Glu Leu Leu Gly Ser Leu Gly Glu Val Pro  
1235 1240 1245

ir Val Glu Ser Phe Leu Gly Glu Gly Ala Val Asp Pro Asn Asp  
1250 1255 1260

o Asn Lys Ala Asn Thr Leu Ser Gln Leu Ser Lys Thr Glu Ile  
1265 1270 1275

er Leu Val Leu Thr Ser Lys Tyr Asp Ile Glu Asp Gly Glu Ala  
1280 1285 1290

e Asp Ser Arg Ser Leu Met Ile Lys Thr Lys Lys Leu Ile Ile

## eolf-seql-S000001.txt

1295                   1300                   1305  
sp Val Ile Arg Asn Gln Pro Gly Asn Thr Leu Thr Glu Ile Leu  
1310                   1315                   1320  
  
lu Thr Pro Ala Thr Ala Gln Gln Glu Val Asp His Ala Thr Asp  
1325                   1330                   1335  
  
st Val Ser Arg Ala Met Ile Asp Ser Arg Thr Pro Glu Glu Met  
1340                   1345                   1350  
  
ys His Ser Gln Ser Met Ile Glu Asp Ala Gln Leu Pro Leu Glu  
1355                   1360                   1365  
  
ln Lys Lys Arg Lys Ile Gln Arg Asn Leu Arg Thr Leu Glu Gln  
1370                   1375                   1380  
  
ir Gly His Val Ser Ser Glu Asn Lys Tyr Gln Asp Ile Leu Asn  
1385                   1390                   1395  
  
.u Ile Ala Lys Asp Ile Arg Asn Gln Arg Ile Tyr Arg Lys Leu  
1400                   1405                   1410  
  
ng Lys Ala Glu Leu Ala Lys Leu Gln Gln Thr Leu Asn Ala Leu  
1415                   1420                   1425  
  
in Lys Lys Ala Ala Phe Tyr Glu Glu Gln Ile Asn Tyr Tyr Asp  
1430                   1435                   1440  
  
ir Tyr Ile Lys Thr Cys Leu Asp Asn Leu Lys Arg Lys Asn Thr  
1445                   1450                   1455  
  
g Arg Ser Ile Lys Leu Asp Gly Lys Gly Glu Pro Lys Gly Ala  
1460                   1465                   1470  
  
s Arg Ala Lys Pro Val Lys Tyr Thr Ala Ala Lys Leu His Glu  
1475                   1480                   1485  
  
s Gly Val Leu Leu Asp Ile Asp Asp Leu Gln Thr Asn Gln Phe  
1490                   1495                   1500

eolf-seql-S000001.txt  
ys Asn Val Thr Phe Asp Ile Ile Ala Thr Glu Asp Val Gly Ile  
1505 1510 1515

he Asp Val Arg Ser Lys Phe Leu Gly Val Glu Met Glu Lys Val  
1520 1525 1530

In Leu Asn Ile Gln Asp Leu Leu Gln Met Gln Tyr Glu Gly Val  
1535 1540 1545

la Val Met Lys Met Phe Asp Lys Val Lys Val Asn Val Asn Leu  
1550 1555 1560

eu Ile Tyr Leu Leu Asn Lys Lys Phe Tyr Gly Lys  
1565 1570 1575

?10> 125  
?11> 212  
?12> PRT  
?13> Homo sapiens

?00> 125

et Ala Tyr Ala Tyr Leu Phe Lys Tyr Ile Ile Ile Gly Asp Thr Gly  
5 10 15

al Gly Lys Ser Cys Leu Leu Leu Gln Phe Thr Asp Lys Arg Phe Gln  
20 25 30

eo Val His Asp Leu Thr Ile Gly Val Glu Phe Gly Ala Arg Met Ile  
35 40 45

ir Ile Asp Gly Lys Gln Ile Lys Leu Gln Ile Trp Asp Thr Ala Gly  
50 55 60

n Glu Ser Phe Arg Ser Ile Thr Arg Ser Tyr Tyr Arg Gly Ala Ala  
70 75 80

y Ala Leu Leu Val Tyr Asp Ile Thr Arg Arg Asp Thr Phe Asn His  
85 90 95

u Thr Thr Trp Leu Glu Asp Ala Arg Gln His Ser Asn Ser Asn Met  
100 105 110

eolf-seql-S000001.txt  
al Ile Met Leu Ile Gly Asn Lys Ser Asp Leu Glu Ser Arg Arg Glu  
115 120 125  
  
al Lys Lys Glu Glu Gly Glu Ala Phe Ala Arg Glu His Gly Leu Ile  
130 135 140  
  
ne Met Glu Thr Ser Ala Lys Thr Ala Ser Asn Val Glu Glu Ala Phe  
45 150 155 160  
  
le Asn Thr Ala Lys Glu Ile Tyr Glu Lys Ile Gln Glu Gly Val Phe  
165 170 175  
  
sp Ile Asn Asn Glu Ala Asn Gly Ile Lys Ile Gly Pro Gln His Ala  
180 185 190  
  
la Thr Asn Ala Thr His Ala Gly Asn Gln Gly Gly Gln Gln Ala Gly  
195 200 205  
  
ly Gly Cys Cys  
210  
  
>10> 126  
>11> 181  
>12> PRT  
>13> Homo sapiens  
  
>100> 126  
  
>t Gly Asn Ile Phe Ala Asn Leu Phe Lys Gly Leu Phe Gly Lys Lys  
5 10 15  
  
.u Met Arg Ile Leu Met Val Gly Leu Asp Ala Ala Gly Lys Thr Thr  
20 25 30  
  
.e Leu Tyr Lys Leu Lys Leu Gly Glu Ile Val Thr Thr Ile Pro Thr  
35 40 45  
  
.e Gly Phe Asn Val Glu Thr Val Glu Tyr Lys Asn Ile Ser Phe Thr  
50 55 60  
  
.l Trp Asp Val Gly Gly Gln Asp Lys Ile Arg Pro Leu Trp Arg His  
70 75 80

eolf-seql-S000001.txt  
yr Phe Gln Asn Thr Gln Gly Leu Ile Phe Val Val Asp Ser Asn Asp  
85 90 95

rg Glu Arg Val Asn Glu Ala Arg Glu Glu Leu Met Arg Met Leu Ala  
100 105 110

lu Asp Glu Leu Arg Asp Ala Val Leu Leu Val Phe Ala Asn Lys Gln  
115 120 125

sp Leu Pro Asn Ala Met Asn Ala Ala Glu Ile Thr Asp Lys Leu Gly  
130 135 140

eu His Ser Leu Arg His Arg Asn Trp Tyr Ile Gln Ala Thr Cys Ala  
45 150 155 160

ir Ser Gly Asp Gly Leu Tyr Glu Gly Leu Asp Trp Leu Ser Asn Gln  
165 170 175

eu Arg Asn Gln Lys  
180

?10> 127  
?11> 732  
?12> PRT  
?13> Homo sapiens

!00> 127

et Pro Glu Glu Thr Gln Thr Gln Asp Gln Pro Met Glu Glu Glu  
5 10 15

il Glu Thr Phe Ala Phe Gln Ala Glu Ile Ala Gln Leu Met Ser Leu  
20 25 30

.e Ile Asn Thr Phe Tyr Ser Asn Lys Glu Ile Phe Leu Arg Glu Leu  
35 40 45

.e Ser Asn Ser Ser Asp Ala Leu Asp Lys Ile Arg Tyr Glu Thr Leu  
50 55 60

.r Asp Pro Ser Lys Leu Asp Ser Gly Lys Glu Leu His Ile Asn Leu  
70 75 80

eolf-seql-S000001.txt

le Pro Asn Lys Gln Asp Arg Thr Leu Thr Ile Val Asp Thr Gly Ile  
85 90 95

ly Met Thr Lys Ala Asp Leu Ile Asn Asn Leu Gly Thr Ile Ala Lys  
100 105 110

er Gly Thr Lys Ala Phe Met Glu Ala Leu Gln Ala Gly Ala Asp Ile  
115 120 125

er Met Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala Tyr Leu Val  
130 135 140

la Glu Lys Val Thr Val Ile Thr Lys His Asn Asp Asp Glu Gln Tyr  
45 150 155 160

la Trp Glu Ser Ser Ala Gly Gly Ser Phe Thr Val Arg Thr Asp Thr  
165 170 175

ly Glu Pro Met Gly Arg Gly Thr Lys Val Ile Leu His Leu Lys Glu  
180 185 190

sp Gln Thr Glu Tyr Leu Glu Glu Arg Arg Ile Lys Glu Ile Val Lys  
195 200 205

/s His Ser Gln Phe Ile Gly Tyr Pro Ile Thr Leu Phe Val Glu Lys  
210 215 220

lu Arg Asp Lys Glu Val Ser Asp Asp Glu Ala Glu Glu Lys Glu Asp  
225 230 235 240

/s Glu Glu Glu Lys Glu Glu Lys Glu Ser Glu Asp Lys Pro  
245 250 255

.u Ile Glu Asp Val Gly Ser Asp Glu Glu Glu Lys Lys Asp Gly  
260 265 270

ip Lys Lys Lys Lys Lys Ile Lys Glu Lys Tyr Ile Asp Gln Glu  
275 280 285

.u Leu Asn Lys Thr Lys Pro Ile Trp Thr Arg Asn Pro Asp Asp Ile  
290 295 300

## eolf-seql-S000001.txt

hr Asn Glu Glu Tyr Gly Glu Phe Tyr Lys Ser Leu Thr Asn Asp Trp  
05 310 315 320

lu Asp His Leu Ala Val Lys His Phe Ser Val Glu Gly Gln Leu Glu  
325 330 335

he Arg Ala Leu Leu Phe Val Pro Arg Arg Ala Pro Phe Asp Leu Phe  
340 345 350

lu Asn Arg Lys Lys Asn Asn Ile Lys Leu Tyr Val Arg Arg Val  
355 360 365

ne Ile Met Asp Asn Cys Glu Glu Leu Ile Pro Glu Tyr Leu Asn Phe  
370 375 380

le Arg Gly Val Val Asp Ser Glu Asp Leu Pro Leu Asn Ile Ser Arg  
35 390 395 400

lu Met Leu Gln Gln Ser Lys Ile Leu Lys Val Ile Arg Lys Asn Leu  
405 410 415

al Lys Lys Cys Leu Glu Leu Phe Thr Glu Leu Ala Glu Asp Lys Glu  
420 425 430

sn Tyr Lys Lys Phe Tyr Glu Gln Phe Ser Lys Asn Ile Lys Leu Gly  
435 440 445

.e His Glu Asp Ser Gln Asn Arg Lys Lys Leu Ser Glu Leu Leu Arg  
450 455 460

'r Tyr Thr Ser Ala Ser Gly Asp Glu Met Val Ser Leu Lys Asp Tyr  
45 470 475 480

's Thr Arg Met Lys Glu Asn Gln Lys His Ile Tyr Tyr Ile Thr Gly  
485 490 495

.u Thr Lys Asp Gln Val Ala Asn Ser Ala Phe Val Glu Arg Leu Arg  
500 505 510

's His Gly Leu Glu Val Ile Tyr Met Ile Glu Pro Ile Asp Glu Tyr  
515 520 525

## eolf-seql-S000001.txt

ys Val Gln Gln Leu Lys Glu Phe Glu Gly Lys Thr Leu Val Ser Val  
530 535 540

ar Lys Glu Gly Leu Glu Leu Pro Glu Asp Glu Glu Glu Lys Lys Lys  
45 550 555 560

In Glu Glu Lys Lys Thr Lys Phe Glu Asn Leu Cys Lys Ile Met Lys  
565 570 575

sp Ile Leu Glu Lys Lys Val Glu Lys Val Val Val Ser Asn Arg Leu  
580 585 590

al Thr Ser Pro Cys Cys Ile Val Thr Ser Thr Tyr Gly Trp Thr Ala  
595 600 605

sn Met Glu Arg Ile Met Lys Ala Gln Ala Leu Arg Asp Asn Ser Thr  
610 615 620

et Gly Tyr Met Ala Ala Lys Lys His Leu Glu Ile Asn Pro Asp His  
630 635 640

er Ile Ile Glu Thr Leu Arg Gln Lys Ala Glu Ala Asp Lys Asn Asp  
645 650 655

's Ser Val Lys Asp Leu Val Ile Leu Leu Tyr Glu Thr Ala Leu Leu  
660 665 670

er Ser Gly Phe Ser Leu Glu Asp Pro Gln Thr His Ala Asn Arg Ile  
675 680 685

r Arg Met Ile Lys Leu Gly Leu Gly Ile Asp Glu Asp Asp Pro Thr  
690 695 700

a Asp Asp Thr Ser Ala Ala Val Thr Glu Glu Met Pro Pro Leu Glu  
5 710 715 720

y Asp Asp Asp Thr Ser Arg Met Glu Glu Val Asp  
725 730

## eolf-seql-S000001.txt

211&gt; 858

212&gt; PRT

213&gt; Homo sapiens

400&gt; 128

et Gly Asp His Leu Asp Leu Leu Leu Gly Val Val Leu Met Ala Gly  
5 10 15

ro Val Phe Gly Ile Pro Ser Cys Ser Phe Asp Gly Arg Ile Ala Phe  
20 25 30

yr Arg Phe Cys Asn Leu Thr Gln Val Pro Gln Val Leu Asn Thr Thr  
35 40 45

lu Arg Leu Leu Leu Ser Phe Asn Tyr Ile Arg Thr Val Thr Ala Ser  
50 55 60

er Phe Pro Phe Leu Glu Gln Leu Gln Leu Leu Glu Leu Gly Ser Gln  
5 70 75 80

yr Thr Pro Leu Thr Ile Asp Lys Glu Ala Phe Arg Asn Leu Pro Asn  
85 90 95

eu Arg Ile Leu Asp Leu Gly Ser Ser Lys Ile Tyr Phe Leu His Pro  
100 105 110

sp Ala Phe Gln Gly Leu Phe His Leu Phe Glu Leu Arg Leu Tyr Phe  
115 120 125

/s Gly Leu Ser Asp Ala Val Leu Lys Asp Gly Tyr Phe Arg Asn Leu  
130 135 140

/s Ala Leu Thr Arg Leu Asp Leu Ser Lys Asn Gln Ile Arg Ser Leu  
15 150 155 160

'r Leu His Pro Ser Phe Gly Lys Leu Asn Ser Leu Lys Ser Ile Asp  
165 170 175

ie Ser Ser Asn Gln Ile Phe Leu Val Cys Glu His Glu Leu Glu Pro  
180 185 190

eu Gln Gly Lys Thr Leu Ser Phe Phe Ser Leu Ala Ala Asn Ser Leu

## eolf-seql-S000001.txt

195

200

205

yr Ser Arg Val Ser Val Asp Trp Gly Lys Cys Met Asn Pro Phe Arg  
210 215 220

sn Met Val Leu Glu Ile Leu Asp Val Ser Gly Asn Gly Trp Thr Val  
25 230 235 240

sp Ile Thr Gly Asn Phe Ser Asn Ala Ile Ser Lys Ser Gln Ala Phe  
245 250 255

er Leu Ile Leu Ala His His Ile Met Gly Ala Gly Phe Gly Phe His  
260 265 270

sn Ile Lys Asp Pro Asp Gln Asn Thr Phe Ala Gly Leu Ala Arg Ser  
275 280 285

er Val Arg His Leu Asp Leu Ser His Gly Phe Val Phe Ser Leu Asn  
290 295 300

er Arg Val Phe Glu Thr Leu Lys Asp Leu Lys Val Leu Asn Leu Ala  
305 310 315 320

yr Asn Lys Ile Asn Lys Ile Ala Asp Glu Ala Phe Tyr Gly Leu Asp  
325 330 335

sn Leu Gln Val Leu Asn Leu Ser Tyr Asn Leu Leu Gly Glu Leu Tyr  
340 345 350

er Ser Asn Phe Tyr Gly Leu Pro Lys Val Ala Tyr Ile Asp Leu Gln  
355 360 365

's Asn His Ile Ala Ile Ile Gln Asp Gln Thr Phe Lys Phe Leu Glu  
370 375 380

's Leu Gln Thr Leu Asp Leu Arg Asp Asn Ala Leu Thr Thr Ile His  
385 390 395 400

ie Ile Pro Ser Ile Pro Asp Ile Phe Leu Ser Gly Asn Lys Leu Val  
405 410 415

eolf-seql-S000001.txt

hr Leu Pro Lys Ile Asn Leu Thr Ala Asn Leu Ile His Leu Ser Glu  
420 425 430

sn Arg Leu Glu Asn Leu Asp Ile Leu Tyr Phe Leu Leu Arg Val Pro  
435 440 445

is Leu Gln Ile Leu Ile Leu Asn Gln Asn Arg Phe Ser Ser Cys Ser  
450 455 460

ly Asp Gln Thr Pro Ser Glu Asn Pro Ser Leu Glu Gln Leu Phe Leu  
475 480

ly Glu Asn Met Leu Gln Leu Ala Trp Glu Thr Glu Leu Cys Trp Asp  
485 490 495

al Phe Glu Gly Leu Ser His Leu Gln Val Leu Tyr Leu Asn His Asn  
500 505 510

/r Leu Asn Ser Leu Pro Pro Gly Val Phe Ser His Leu Thr Ala Leu  
515 520 525

:g Gly Leu Ser Leu Asn Ser Asn Arg Leu Thr Val Leu Ser His Asn  
530 535 540

sp Leu Pro Ala Asn Leu Glu Ile Leu Asp Ile Ser Arg Asn Gln Leu  
550 555 560

eu Ala Pro Asn Pro Asp Val Phe Val Ser Leu Ser Val Leu Asp Ile  
565 570 575

ur His Asn Lys Phe Ile Cys Glu Cys Glu Leu Ser Thr Phe Ile Asn  
580 585 590

:p Leu Asn His Thr Asn Val Thr Ile Ala Gly Pro Pro Ala Asp Ile  
595 600 605

r Cys Val Tyr Pro Asp Ser Phe Ser Gly Val Ser Leu Phe Ser Leu  
610 615 620

r Thr Glu Gly Cys Asp Glu Glu Glu Val Leu Lys Ser Leu Lys Phe  
630 635 640

## eolf-seql-S000001.txt

er Leu Phe Ile Val Cys Thr Val Thr Leu Thr Leu Phe Leu Met Thr  
645 650 655

le Leu Thr Val Thr Lys Phe Arg Gly Phe Cys Phe Ile Cys Tyr Lys  
660 665 670

hr Ala Gln Arg Leu Val Phe Lys Asp His Pro Gln Gly Thr Glu Pro  
675 680 685

sp Met Tyr Lys Tyr Asp Ala Tyr Leu Cys Phe Ser Ser Lys Asp Phe  
690 695 700

nr Trp Val Gln Asn Ala Leu Leu Lys His Leu Asp Thr Gln Tyr Ser  
705 710 715 720

sp Gln Asn Arg Phe Asn Leu Cys Phe Glu Glu Arg Asp Phe Val Pro  
725 730 735

ly Glu Asn Arg Ile Ala Asn Ile Gln Asp Ala Ile Trp Asn Ser Arg  
740 745 750

/s Ile Val Cys Leu Val Ser Arg His Phe Leu Arg Asp Gly Trp Cys  
755 760 765

eu Glu Ala Phe Ser Tyr Ala Gln Gly Arg Cys Leu Ser Asp Leu Asn  
770 775 780

er Ala Leu Ile Met Val Val Val Gly Ser Leu Ser Gln Tyr Gln Leu  
785 790 795 800

et Lys His Gln Ser Ile Arg Gly Phe Val Gln Lys Gln Gln Tyr Leu  
805 810 815

ng Trp Pro Glu Asp Leu Gln Asp Val Gly Trp Phe Leu His Lys Leu  
820 825 830

er Gln Gln Ile Leu Lys Lys Glu Lys Glu Lys Lys Lys Asp Asn Asn  
835 840 845

e Pro Leu Gln Thr Val Ala Thr Ile Ser  
850 855

## eolf-seql-S000001.txt

210&gt; 129

211&gt; 466

212&gt; PRT

213&gt; Homo sapiens

400&gt; 129

et Val Met Glu Lys Pro Ser Pro Leu Leu Val Gly Arg Glu Phe Val  
5 10 15

rg Gln Tyr Tyr Thr Leu Leu Asn Gln Ala Pro Asp Met Leu His Arg  
20 25 30

ne Tyr Gly Lys Asn Ser Ser Tyr Val His Gly Gly Leu Asp Ser Asn  
35 40 45

ly Lys Pro Ala Asp Ala Val Tyr Gly Gln Lys Glu Ile His Arg Lys  
50 55 60

il Met Ser Gln Asn Phe Thr Asn Cys His Thr Lys Ile Arg His Val  
70 75 80

sp Ala His Ala Thr Leu Asn Asp Gly Val Val Val Gln Val Met Gly  
85 90 95

eu Leu Ser Asn Asn Gln Ala Leu Arg Arg Phe Met Gln Thr Phe  
100 105 110

al Leu Ala Pro Glu Gly Ser Val Ala Asn Lys Phe Tyr Val His Asn  
115 120 125

ip Ile Phe Arg Tyr Gln Asp Glu Val Phe Gly Gly Phe Val Thr Glu  
130 135 140

o Gln Glu Glu Ser Glu Glu Val Glu Glu Pro Glu Glu Arg Gln  
5 150 155 160

n Thr Pro Glu Val Val Pro Asp Asp Ser Gly Thr Phe Tyr Asp Gln  
165 170 175

a Val Val Ser Asn Asp Met Glu Glu His Leu Glu Glu Pro Val Ala  
180 185 190

## eolf-seql-S000001.txt

lu Pro Glu Pro Asp Pro Glu Pro Glu Pro Glu Gln Glu Pro Val Ser  
195 200 205

lu Ile Gln Glu Glu Lys Pro Glu Pro Val Leu Glu Glu Thr Ala Pro  
210 215 220

lu Asp Ala Gln Lys Ser Ser Ser Pro Ala Pro Ala Asp Ile Ala Gln  
25 230 235 240

hr Val Gln Glu Asp Leu Arg Thr Phe Ser Trp Ala Ser Val Thr Ser  
245 250 255

ys Asn Leu Pro Pro Ser Gly Ala Val Pro Val Thr Gly Ile Pro Pro  
260 265 270

is Val Val Lys Val Pro Ala Ser Gln Pro Arg Pro Glu Ser Lys Pro  
275 280 285

lu Ser Gln Ile Pro Pro Gln Arg Pro Gln Arg Asp Gln Arg Val Arg  
290 295 300

lu Gln Arg Ile Asn Ile Pro Pro Gln Arg Gly Pro Arg Pro Ile Arg  
305 310 315 320

lu Ala Gly Glu Gln Gly Asp Ile Glu Pro Arg Arg Met Val Arg His  
325 330 335

to Asp Ser His Gln Leu Phe Ile Gly Asn Leu Pro His Glu Val Asp  
340 345 350

's Ser Glu Leu Lys Asp Phe Phe Gln Ser Tyr Gly Asn Val Val Glu  
355 360 365

lu Arg Ile Asn Ser Gly Gly Lys Leu Pro Asn Phe Gly Phe Val Val  
370 375 380

ie Asp Asp Ser Glu Pro Val Gln Lys Val Leu Ser Asn Arg Pro Ile  
395 400

t Phe Arg Gly Glu Val Arg Leu Asn Val Glu Glu Lys Lys Thr Arg

## eolf-seql-S000001.txt

405

410

415

la Ala Arg Glu Gly Asp Arg Arg Asp Asn Arg Leu Arg Gly Pro Gly  
420 425 430

ly Pro Arg Gly Gly Leu Gly Gly Met Arg Gly Pro Pro Arg Gly  
435 440 445

ly Met Val Gln Lys Pro Gly Phe Gly Val Gly Arg Gly Leu Ala Pro  
450 455 460

:g Gln  
55

?10> 130  
?11> 245  
?12> PRT  
?13> Homo sapiens

!00> 130

et Thr Leu Phe Pro Val Leu Leu Phe Leu Val Ala Gly Leu Leu Pro  
5 10 15

er Phe Pro Ala Asn Glu Asp Lys Asp Pro Ala Phe Thr Ala Leu Leu  
20 25 30

ir Thr Gln Thr Gln Val Gln Arg Glu Ile Val Asn Lys His Asn Glu  
35 40 45

iu Arg Arg Ala Val Ser Pro Pro Ala Arg Asn Met Leu Lys Met Glu  
50 55 60

p Asn Lys Glu Ala Ala Ala Asn Ala Gln Lys Trp Ala Asn Gln Cys  
70 75 80

n Tyr Arg His Ser Asn Pro Lys Asp Arg Met Thr Ser Leu Lys Cys  
85 90 95

y Glu Asn Leu Tyr Met Ser Ser Ala Ser Ser Ser Trp Ser Gln Ala  
100 105 110

e Gln Ser Trp Phe Asp Glu Tyr Asn Asp Phe Asp Phe Gly Val Gly

## eolf-seql-S000001.txt

115

120

125

ro Lys Thr Pro Asn Ala Val Val Gly His Tyr Thr Gln Val Val Trp  
130 135 140

yr Ser Ser Tyr Leu Val Gly Cys Gly Asn Ala Tyr Cys Pro Asn Gln  
45 150 155 160

is Val Leu Lys Tyr Tyr Val Cys Gln Tyr Cys Pro Ala Gly Asn  
165 170 175

cp Ala Asn Arg Leu Tyr Val Pro Tyr Glu Gln Gly Ala Pro Cys Ala  
180 185 190

er Cys Pro Asp Asn Cys Asp Asp Gly Leu Cys Thr Asn Gly Cys Lys  
195 200 205

yr Glu Asp Leu Tyr Ser Asn Cys Lys Ser Leu Lys Leu Thr Leu Thr  
210 215 220

vs Lys His Gln Leu Val Arg Asp Ser Cys Lys Ala Ser Cys Asn Cys  
225 230 235 240

er Asn Ser Ile Tyr  
245

:10> 131

:11> 202

:12> PRT

:13> Homo sapiens

:00> 131

at Cys Thr Gly Gly Cys Ala Arg Cys Leu Gly Gly Thr Leu Ile Pro  
5 10 15

u Ala Phe Phe Gly Phe Leu Ala Asn Ile Leu Leu Phe Phe Pro Gly  
20 25 30

y Lys Val Ile Asp Asp Asn Asp His Leu Ser Gln Glu Ile Trp Phe  
35 40 45

e Gly Gly Ile Leu Gly Ser Gly Val Leu Met Ile Phe Pro Ala Leu

## eolf-seql-S000001.txt

50 55 60

al Phe Leu Gly Leu Lys Asn Asn Asp Cys Cys Gly Cys Cys Gly Asn  
5 70 75 80

lu Gly Cys Gly Lys Arg Phe Ala Met Phe Thr Ser Thr Ile Phe Ala  
85 90 95

al Val Gly Phe Leu Gly Ala Gly Tyr Ser Phe Ile Ile Ser Ala Ile  
100 105 110

er Ile Asn Lys Gly Pro Lys Cys Leu Met Ala Asn Ser Thr Trp Gly  
115 120 125

yr Pro Phe His Asp Gly Asp Tyr Leu Asn Asp Glu Ala Leu Trp Asn  
130 135 140

/s Cys Arg Glu Pro Leu Asn Val Val Pro Trp Asn Leu Thr Leu Phe  
145 150 155 160

er Ile Leu Leu Val Val Gly Gly Ile Gln Met Val Leu Cys Ala Ile  
165 170 175

in Val Val Asn Gly Leu Leu Gly Thr Leu Cys Gly Asp Cys Gln Cys  
180 185 190

's Gly Cys Cys Gly Gly Asp Gly Pro Val  
195 200

:10> 132

:11> 295

:12> PRT

:13> Homo sapiens

:00> 132

at Gln Pro Glu Gly Ala Glu Lys Gly Lys Ser Phe Lys Gln Arg Leu  
5 10 15

l Leu Lys Ser Ser Leu Ala Lys Glu Thr Leu Ser Glu Phe Leu Gly  
20 25 30

r Phe Ile Leu Ile Val Leu Gly Cys Gly Cys Val Ala Gln Ala Ile

## eolf-seql-S000001.txt

35

40

45

eu Ser Arg Gly Arg Phe Gly Gly Val Ile Thr Ile Asn Val Gly Phe  
50 55 60

er Met Ala Val Ala Met Ala Ile Tyr Val Ala Gly Gly Val Ser Gly  
5 70 75 80

ly His Ile Asn Pro Ala Val Ser Leu Ala Met Cys Leu Phe Gly Arg  
85 90 95

et Lys Trp Phe Lys Leu Pro Phe Tyr Val Gly Ala Gln Phe Leu Gly  
100 105 110

la Phe Val Gly Ala Ala Thr Val Phe Gly Ile Tyr Tyr Asp Gly Leu  
115 120 125

et Ser Phe Ala Gly Gly Lys Leu Leu Ile Val Gly Glu Asn Ala Thr  
130 135 140

la His Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Ala Asn  
45 150 155 160

la Phe Ala Asp Gln Val Val Ala Thr Met Ile Leu Leu Ile Ile Val  
165 170 175

ne Ala Ile Phe Asp Ser Arg Asn Leu Gly Ala Pro Arg Gly Leu Glu  
180 185 190

so Ile Ala Ile Gly Leu Leu Ile Ile Val Ile Ala Ser Ser Leu Gly  
195 200 205

eu Asn Ser Gly Cys Ala Met Asn Pro Ala Arg Asp Leu Ser Pro Arg  
210 215 220

eu Phe Thr Ala Leu Ala Gly Trp Gly Phe Glu Val Phe Arg Ala Gly  
225 230 235 240

in Asn Phe Trp Trp Ile Pro Val Val Gly Pro Leu Val Gly Ala Val  
245 250 255

## eolf-seql-S000001.txt

le Gly Gly Leu Ile Tyr Val Leu Val Ile Glu Ile His His Pro Glu  
260 265 270

ro Asp Ser Val Phe Lys Ala Glu Gln Ser Glu Asp Lys Pro Glu Lys  
275 280 285

yr Glu Leu Ser Val Ile Met  
290 295

210> 133

211> 288

212> PRT

213> Homo sapiens

400> 133

et Trp Leu Pro Ala Leu Val Leu Ala Thr Leu Ala Ala Ser Ala Ala  
5 10 15

sp Ala Val His Pro Ser Ser Pro Pro Val Val Asp Thr Val His Gly  
20 25 30

ys Val Leu Gly Lys Phe Ile Ser Leu Glu Gly Phe Ala Gln Pro Val  
35 40 45

la Val Phe Leu Gly Ile Pro Phe Ala Lys Pro Pro Leu Gly Pro Leu  
50 55 60

ng Phe Thr Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe Val Lys Asn  
70 75 80

.a Thr Leu Tyr Pro Pro Met Phe Thr Gln Asp Pro Arg Arg Gly Gly  
85 90 95

.n Leu Ile Ser Glu Leu Phe Thr Asn Arg Lys Glu Asn Ile Pro Leu  
100 105 110

's Leu Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro Ala Asp  
115 120 125

.u. Thr Lys Lys Asn Arg Leu Pro Val Met Val Trp Ile His Gly Gly  
130 135 140

## eolf-seql-S000001.txt

ly Leu Met Val Gly Ala Ala Ser Thr Tyr Asp Gly Leu Ala Leu Ala  
45 150 155 160

Ia His Glu Asn Val Val Val Val Thr Ile Gln Tyr Arg Leu Gly Ile  
165 170 175

:p Gly Phe Phe Ser Thr Gly Asp Glu His Ser Pro Gly Asn Trp Gly  
180 185 190

is Leu Asp Gln Leu Ala Ala Leu His Trp Val Gln Asp Asn Ile Ala  
195 200 205

er Phe Gly Gly Asn Pro Gly Ser Val Thr Ile Phe Gly Gly Ser Ala  
210 215 220

.y Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala Lys Asn  
25 230 235 240

eu Phe His Arg Ala Ile Ser Glu Ser Gly Val Ala Leu Thr Ser Val  
245 250 255

eu Val Lys Lys Gly Asp Val Lys Pro Leu Ala Glu Val Gly Leu Arg  
260 265 270

eu Val Arg Leu Trp Leu Asp Thr His Thr Ser Leu Ala Leu Cys Ser  
275 280 285

10> 134

11> 98

12> PRT

13> Homo sapiens

00> 134

t Met Cys Gly Ala Pro Ser Ala Thr Gln Pro Ala Thr Ala Glu Thr  
5 10 15

n His Ile Ala Asp Gln Val Arg Ser Gln Leu Glu Glu Lys Glu Asn  
20 25 30

s Lys Phe Pro Val Phe Lys Ala Val Ser Phe Lys Ser Gln Val Val  
35 40 45

eolf-seql-S000001.txt

la Gly Thr Asn Tyr Phe Ile Lys Val His Val Gly Asp Glu Asp Phe  
50 55 60

al His Leu Arg Val Phe Gln Ser Leu Pro His Glu Asn Lys Pro Leu  
5 70 75 80

hr Leu Ser Asn Tyr Gln Thr Asn Lys Ala Lys His Asp Glu Leu Thr  
85 90 95

yr Phe

210> 135

211> 254

212> PRT

213> Homo sapiens

400> 135

et Ala Ser Leu Leu Lys Val Asp Gln Glu Val Lys Leu Lys Val Asp  
5 10 15

er Phe Arg Glu Arg Ile Thr Ser Glu Ala Glu Asp Leu Val Ala Asn  
20 25 30

re Phe Pro Lys Lys Leu Leu Glu Leu Asp Ser Phe Leu Lys Glu Pro  
35 40 45

le Leu Asn Ile His Asp Leu Thr Gln Ile His Ser Asp Met Asn Leu  
50 55 60

o Val Pro Asp Pro Ile Leu Leu Thr Asn Ser His Asp Gly Leu Asp  
70 75 80

.y Pro Thr Tyr Lys Lys Arg Arg Leu Asp Glu Cys Glu Ala Phe  
85 90 95

.n Gly Thr Lys Val Phe Val Met Pro Asn Gly Met Leu Lys Ser Asn  
100 105 110

.n Gln Leu Val Asp Ile Ile Glu Lys Val Lys Pro Glu Ile Arg Leu  
115 120 125

## eolf-seql-S000001.txt

eu Ile Glu Lys Cys Asn Thr Val Lys Met Trp Val Gln Leu Leu Ile  
130 135 140

ro Arg Ile Glu Asp Gly Asn Asn Phe Gly Val Ser Ile Gln Glu Glu  
45 150 155 160

hr Val Ala Glu Leu Arg Thr Val Glu Ser Glu Ala Ala Ser Tyr Leu  
165 170 175

sp Gln Ile Ser Arg Tyr Tyr Ile Thr Arg Ala Lys Leu Val Ser Lys  
180 185 190

le Ala Lys Tyr Pro His Val Glu Asp Tyr Arg Arg Thr Val Thr Glu  
195 200 205

le Asp Glu Lys Glu Tyr Ile Ser Leu Arg Leu Ile Ile Ser Glu Leu  
210 215 220

rg Asn Gln Tyr Val Thr Leu His Asp Met Ile Leu Lys Asn Ile Glu  
25 230 235 240

/s Ile Lys Arg Pro Arg Ser Ser Asn Ala Glu Thr Leu Tyr  
245 250

?10> 136  
?11> 189  
?12> PRT  
?13> Homo sapiens

!00> 136

et Gly Leu Gly Ala Arg Gly Ala Trp Ala Ala Leu Leu Leu Gly Thr  
5 10 15

eu Gln Val Leu Ala Leu Leu Gly Ala Ala His Glu Ser Ala Ala Met  
20 25 30

.a Glu Thr Leu Gln His Val Pro Ser Asp His Thr Asn Glu Thr Ser  
35 40 45

:n Ser Thr Val Lys Pro Pro Thr Ser Val Ala Ser Asp Ser Ser Asn  
50 55 60

eolf-seql-S000001.txt

hr Thr Val Thr Thr Met Lys Pro Thr Ala Ala Ser Asn Thr Thr Thr  
5 70 75 80

ro Gly Met Val Ser Thr Asn Met Thr Ser Thr Thr Leu Lys Ser Thr  
85 90 95

ro Lys Thr Thr Ser Val Ser Gln Asn Thr Ser Gln Ile Ser Thr Ser  
100 105 110

nr Met Thr Val Thr His Asn Ser Ser Val Thr Ser Ala Ala Ser Ser  
115 120 125

al Thr Ile Thr Thr Met His Ser Glu Ala Lys Lys Gly Ser Lys  
130 135 140

ne Asp Thr Gly Ser Phe Val Gly Gly Ile Val Leu Thr Leu Gly Val  
45 150 155 160

eu Ser Ile Leu Tyr Ile Gly Cys Lys Met Tyr Tyr Ser Arg Arg Gly  
165 170 175

le Arg Tyr Arg Thr Ile Asp Glu His Asp Ala Ile Ile  
180 185

?10> 137

?11> 2314

?12> PRT

?13> Homo sapiens

!00> 137

st Arg Ile Leu Lys Arg Phe Leu Ala Cys Ile Gln Leu Leu Cys Val  
5 10 15

's Arg Leu Asp Trp Ala Asn Gly Tyr Tyr Arg Gln Gln Arg Lys Leu  
20 25 30

.l Glu Glu Ile Gly Trp Ser Tyr Thr Gly Ala Leu Asn Gln Lys Asn  
35 40 45

p Gly Lys Lys Tyr Pro Thr Cys Asn Ser Pro Lys Gln Ser Pro Ile  
50 55 60

eolf-seql-S000001.txt

sn	Ile	Asp	Glu	Asp	Leu	Thr	Gln	Val	Asn	Val	Asn	Leu	Lys	Lys	Leu
5					70				75					80	
ys	Phe	Gln	Gly	Trp	Asp	Lys	Thr	Ser	Leu	Glu	Asn	Thr	Phe	Ile	His
					85				90					95	
sn	Thr	Gly	Lys	Thr	Val	Glu	Ile	Asn	Leu	Thr	Asn	Asp	Tyr	Arg	Val
					100			105					110		
er	Gly	Gly	Val	Ser	Glu	Met	Val	Phe	Lys	Ala	Ser	Lys	Ile	Thr	Phe
					115			120					125		
is	Trp	Gly	Lys	Cys	Asn	Met	Ser	Ser	Asp	Gly	Ser	Glu	His	Ser	Leu
					130			135				140			
lu	Gly	Gln	Lys	Phe	Pro	Leu	Glu	Met	Gln	Ile	Tyr	Cys	Phe	Asp	Ala
					45			150			155			160	
sp	Arg	Phe	Ser	Ser	Phe	Glu	Glu	Ala	Val	Lys	Gly	Lys	Gly	Lys	Leu
					165				170				175		
rg	Ala	Leu	Ser	Ile	Leu	Phe	Glu	Val	Gly	Thr	Glu	Glu	Asn	Leu	Asp
					180			185					190		
re	Lys	Ala	Ile	Ile	Asp	Gly	Val	Glu	Ser	Val	Ser	Arg	Phe	Gly	Lys
					195			200				205			
ln	Ala	Ala	Leu	Asp	Pro	Phe	Ile	Leu	Leu	Asn	Leu	Leu	Pro	Asn	Ser
					210			215				220			
ir	Asp	Lys	Tyr	Tyr	Ile	Tyr	Asn	Gly	Ser	Leu	Thr	Ser	Pro	Pro	Cys
					215			230			235			240	
ir	Asp	Thr	Val	Asp	Trp	Ile	Val	Phe	Lys	Asp	Thr	Val	Ser	Ile	Ser
					245				250				255		
.u	Ser	Gln	Leu	Ala	Val	Phe	Cys	Glu	Val	Leu	Thr	Met	Gln	Gln	Ser
					260				265				270		
.y	Tyr	Val	Met	Leu	Met	Asp	Tyr	Leu	Gln	Asn	Asn	Phe	Arg	Glu	Gln
					275			280					285		

## eolf-seql-S000001.txt

ln Tyr Lys Phe Ser Arg Gln Val Phe Ser Ser Tyr Thr Gly Lys Glu  
290 295 300

lu Ile His Glu Ala Val Cys Ser Ser Glu Pro Glu Asn Val Gln Ala  
05 310 315 320

sp Pro Glu Asn Tyr Thr Ser Leu Leu Val Thr Trp Glu Arg Pro Arg  
325 330 335

al Val Tyr Asp Thr Met Ile Glu Lys Phe Ala Val Leu Tyr Gln Gln  
340 345 350

eu Asp Gly Glu Asp Gln Thr Lys His Glu Phe Leu Thr Asp Gly Tyr  
355 360 365

ln Asp Leu Gly Ala Ile Leu Asn Asn Leu Leu Pro Asn Met Ser Tyr  
370 375 380

al Leu Gln Ile Val Ala Ile Cys Thr Asn Gly Leu Tyr Gly Lys Tyr  
85 390 395 400

er Asp Gln Leu Ile Val Asp Met Pro Thr Asp Asn Pro Glu Leu Asp  
405 410 415

eu Phe Pro Glu Leu Ile Gly Thr Glu Glu Ile Ile Lys Glu Glu Glu  
420 425 430

lu Gly Lys Asp Ile Glu Glu Gly Ala Ile Val Asn Pro Gly Arg Asp  
435 440 445

er Ala Thr Asn Gln Ile Arg Lys Lys Glu Pro Gln Ile Ser Thr Thr  
450 455 460

ir His Tyr Asn Arg Ile Gly Thr Lys Tyr Asn Glu Ala Lys Thr Asn  
55 470 475 480

rg Ser Pro Thr Arg Gly Ser Glu Phe Ser Gly Lys Gly Asp Val Pro  
485 490 495

in Thr Ser Leu Asn Ser Thr Ser Gln Pro Val Thr Lys Leu Ala Thr  
500 505 510

## eolf-seql-S000001.txt

lu Lys Asp Ile Ser Leu Thr Ser Gln Thr Val Thr Glu Leu Pro Pro  
515 520 525

is Thr Val Glu Gly Thr Ser Ala Ser Leu Asn Asp Gly Ser Lys Thr  
530 535 540

al Leu Arg Ser Pro His Met Asn Leu Ser Gly Thr Ala Glu Ser Leu  
45 550 555 560

sn Thr Val Ser Ile Thr Glu Tyr Glu Glu Ser Leu Leu Thr Ser  
565 570 575

he Lys Leu Asp Thr Gly Ala Glu Asp Ser Ser Gly Ser Ser Pro Ala  
580 585 590

hr Ser Ala Ile Pro Phe Ile Ser Glu Asn Ile Ser Gln Gly Tyr Ile  
595 600 605

he Ser Ser Glu Asn Pro Glu Thr Ile Thr Tyr Asp Val Leu Ile Pro  
610 615 620

lu Ser Ala Arg Asn Ala Ser Glu Asp Ser Thr Ser Ser Gly Ser Glu  
25 630 635 640

lu Ser Leu Lys Asp Pro Ser Met Glu Gly Asn Val Trp Phe Pro Ser  
645 650 655

er Thr Asp Ile Thr Ala Gln Pro Asp Val Gly Ser Gly Arg Glu Ser  
660 665 670

re Leu Gln Thr Asn Tyr Thr Glu Ile Arg Val Asp Glu Ser Glu Lys  
675 680 685

ir Thr Lys Ser Phe Ser Ala Gly Pro Val Met Ser Gln Gly Pro Ser  
690 695 700

il Thr Asp Leu Glu Met Pro His Tyr Ser Thr Phe Ala Tyr Phe Pro  
705 710 715 720

ir Glu Val Thr Pro His Ala Phe Thr Pro Ser Ser Arg Gln Gln Asp

## eolf-seql-S000001.txt

725

730

735

eu Val Ser Thr Val Asn Val Val Tyr Ser Gln Thr Thr Gln Pro Val  
740 745 750

yr Asn Gly Glu Thr Pro Leu Gln Pro Ser Tyr Ser Ser Glu Val Phe  
755 760 765

ro Leu Val Thr Pro Leu Leu Asp Asn Gln Ile Leu Asn Thr Thr  
770 775 780

ro Ala Ala Ser Ser Ser Asp Ser Ala Leu His Ala Thr Pro Val Phe  
85 790 795 800

ro Ser Val Asp Val Ser Phe Glu Ser Ile Leu Ser Ser Tyr Asp Gly  
805 810 815

la Pro Leu Leu Pro Phe Ser Ser Ala Ser Phe Ser Ser Glu Leu Phe  
820 825 830

rg His Leu His Thr Val Ser Gln Ile Leu Pro Gln Val Thr Ser Ala  
835 840 845

or Glu Ser Asp Lys Val Pro Leu His Ala Ser Leu Pro Val Ala Gly  
850 855 860

ly Asp Leu Leu Leu Glu Pro Ser Leu Ala Gln Tyr Ser Asp Val Leu  
65 870 875 880

er Thr Thr His Ala Ala Ser Glu Thr Leu Glu Phe Gly Ser Glu Ser  
885 890 895

ly Val Leu Tyr Lys Thr Leu Met Phe Ser Gln Val Glu Pro Pro Ser  
900 905 910

er Asp Ala Met Met His Ala Arg Ser Ser Gly Pro Glu Pro Ser Tyr  
915 920 925

.a Leu Ser Asp Asn Glu Gly Ser Gln His Ile Phe Thr Val Ser Tyr  
930 935 940

eolf-seql-S000001.txt  
er Ser Ala Ile Pro Val His Asp Ser Val Gly Val Thr Tyr Gln Gly  
45 950 955 960  
  
er Leu Phe Ser Gly Pro Ser His Ile Pro Ile Pro Lys Ser Ser Leu  
965 970 975  
  
le Thr Pro Thr Ala Ser Leu Leu Gln Pro Thr His Ala Leu Ser Gly  
980 985 990  
  
sp Gly Glu Trp Ser Gly Ala Ser Ser Asp Ser Glu Phe Leu Leu Pro  
995 1000 1005  
  
sp Thr Asp Gly Leu Thr Ala Leu Asn Ile Ser Ser Pro Val Ser  
1010 1015 1020  
  
al Ala Glu Phe Thr Tyr Thr Thr Ser Val Phe Gly Asp Asp Asn  
1025 1030 1035  
  
ys Ala Leu Ser Lys Ser Glu Ile Ile Tyr Gly Asn Glu Thr Glu  
1040 1045 1050  
  
eu Gln Ile Pro Ser Phe Asn Glu Met Val Tyr Pro Ser Glu Ser  
1055 1060 1065  
  
ir Val Met Pro Asn Met Tyr Asp Asn Val Asn Lys Leu Asn Ala  
1070 1075 1080  
  
er Leu Gln Glu Thr Ser Val Ser Ile Ser Ser Thr Lys Gly Met  
1085 1090 1095  
  
ie Pro Gly Ser Leu Ala His Thr Thr Thr Lys Val Phe Asp His  
1100 1105 1110  
  
.u Ile Ser Gln Val Pro Glu Asn Asn Phe Ser Val Gln Pro Thr  
1115 1120 1125  
  
.s Thr Val Ser Gln Ala Ser Gly Asp Thr Ser Leu Lys Pro Val  
1130 1135 1140  
  
.u Ser Ala Asn Ser Glu Pro Ala Ser Ser Asp Pro Ala Ser Ser  
1145 1150 1155

## eolf-seql-S000001.txt

lu Met Leu Ser Pro Ser Thr Gln Leu Leu Phe Tyr Glu Thr Ser  
1160 1165 1170

la Ser Phe Ser Thr Glu Val Leu Leu Gln Pro Ser Phe Gln Ala  
1175 1180 1185

er Asp Val Asp Thr Leu Leu Lys Thr Val Leu Pro Ala Val Pro  
1190 1195 1200

er Asp Pro Ile Leu Val Glu Thr Pro Lys Val Asp Lys Ile Ser  
1205 1210 1215

er Thr Met Leu His Leu Ile Val Ser Asn Ser Ala Ser Ser Glu  
1220 1225 1230

sn Met Leu His Ser Thr Ser Val Pro Val Phe Asp Val Ser Pro  
1235 1240 1245

nr Ser His Met His Ser Ala Ser Leu Gln Gly Leu Thr Ile Ser  
1250 1255 1260

yr Ala Ser Glu Lys Tyr Glu Pro Val Leu Leu Lys Ser Glu Ser  
1265 1270 1275

er His Gln Val Val Pro Ser Leu Tyr Ser Asn Asp Glu Leu Phe  
1280 1285 1290

ln Thr Ala Asn Leu Glu Ile Asn Gln Ala His Pro Pro Lys Gly  
1295 1300 1305

ng His Val Phe Ala Thr Pro Val Leu Ser Ile Asp Glu Pro Leu  
1310 1315 1320

sn Thr Leu Ile Asn Lys Leu Ile His Ser Asp Glu Ile Leu Thr  
1325 1330 1335

er Thr Lys Ser Ser Val Thr Gly Lys Val Phe Ala Gly Ile Pro  
1340 1345 1350

ir Val Ala Ser Asp Thr Phe Val Ser Thr Asp His Ser Val Pro  
1355 1360 1365

## eolf-seql-S000001.txt

le Gly Asn Gly His Val Ala Ile Thr Ala Val Ser Pro His Arg  
1370 1375 1380

sp Gly Ser Val Thr Ser Thr Lys Leu Leu Phe Pro Ser Lys Ala  
1385 1390 1395

hr Ser Glu Leu Ser His Ser Ala Lys Ser Asp Ala Gly Leu Val  
1400 1405 1410

ly Gly Gly Glu Asp Gly Asp Thr Asp Asp Asp Gly Asp Asp Asp  
1415 1420 1425

sp Asp Arg Asp Ser Asp Gly Leu Ser Ile His Lys Cys Met Ser  
1430 1435 1440

ys Ser Ser Tyr Arg Glu Ser Gln Glu Lys Val Met Asn Asp Ser  
1445 1450 1455

sp Thr His Glu Asn Ser Leu Met Asp Gln Asn Asn Pro Ile Ser  
1460 1465 1470

pr Ser Leu Ser Glu Asn Ser Glu Glu Asp Asn Arg Val Thr Ser  
1475 1480 1485

al Ser Ser Asp Ser Gln Thr Gly Met Asp Arg Ser Pro Gly Lys  
1490 1495 1500

er Pro Ser Ala Asn Gly Leu Ser Gln Lys His Asn Asp Gly Lys  
1505 1510 1515

.u Glu Asn Asp Ile Gln Thr Gly Ser Ala Leu Leu Pro Leu Ser  
1520 1525 1530

:o Glu Ser Lys Ala Trp Ala Val Leu Thr Ser Asp Glu Glu Ser  
1535 1540 1545

.y Ser Gly Gln Gly Thr Ser Asp Ser Leu Asn Glu Asn Glu Thr  
1550 1555 1560

or Thr Asp Phe Ser Phe Ala Asp Thr Asn Glu Lys Asp Ala Asp

eolf-seql-S000001.txt

1565	1570	1575
 ly Ile Leu Ala Ala Gly Asp Ser Glu Ile Thr Pro Gly Phe Pro 1580 1585 1590		
 ln Ser Pro Thr Ser Ser Val Thr Ser Glu Asn Ser Glu Val Phe 1595 1600 1605		
 is Val Ser Glu Ala Glu Ala Ser Asn Ser Ser His Glu Ser Arg 1610 1615 1620		
 le Gly Leu Ala Glu Gly Leu Glu Ser Glu Lys Lys Ala Val Ile 1625 1630 1635		
 ro Leu Val Ile Val Ser Ala Leu Thr Phe Ile Cys Leu Val Val 1640 1645 1650		
 eu Val Gly Ile Leu Ile Tyr Trp Arg Lys Cys Phe Gln Thr Ala 1655 1660 1665		
 is Phe Tyr Leu Glu Asp Ser Thr Ser Pro Arg Val Ile Ser Thr 1670 1675 1680		
 eo Pro Thr Pro Ile Phe Pro Ile Ser Asp Asp Val Gly Ala Ile 1685 1690 1695		
 eo Ile Lys His Phe Pro Lys His Val Ala Asp Leu His Ala Ser 1700 1705 1710		
 er Gly Phe Thr Glu Glu Phe Glu Thr Leu Lys Glu Phe Tyr Gln 1715 1720 1725		
 .u Val Gln Ser Cys Thr Val Asp Leu Gly Ile Thr Ala Asp Ser 1730 1735 1740		
 .r Asn His Pro Asp Asn Lys His Lys Asn Arg Tyr Ile Asn Ile 1745 1750 1755		
 .l Ala Tyr Asp His Ser Arg Val Lys Leu Ala Gln Leu Ala Glu 1760 1765 1770		

eolf-seql-S000001.txt  
ys Asp Gly Lys Leu Thr Asp Tyr Ile Asn Ala Asn Tyr Val Asp  
1775 1780 1785

ly Tyr Asn Arg Pro Lys Ala Tyr Ile Ala Ala Gln Gly Pro Leu  
1790 1795 1800

ys Ser Thr Ala Glu Asp Phe Trp Arg Met Ile Trp Glu His Asn  
1805 1810 1815

al Glu Val Ile Val Met Ile Thr Asn Leu Val Glu Lys Gly Arg  
1820 1825 1830

rg Lys Cys Asp Gln Tyr Trp Pro Ala Asp Gly Ser Glu Glu Tyr  
1835 1840 1845

ly Asn Phe Leu Val Thr Gln Lys Ser Val Gln Val Leu Ala Tyr  
1850 1855 1860

yr Thr Val Arg Asn Phe Thr Leu Arg Asn Thr Lys Ile Lys Lys  
1865 1870 1875

ly Ser Gln Lys Gly Arg Pro Ser Gly Arg Val Val Thr Gln Tyr  
1880 1885 1890

is Tyr Thr Gln Trp Pro Asp Met Gly Val Pro Glu Tyr Ser Leu  
1895 1900 1905

o Val Leu Thr Phe Val Arg Lys Ala Ala Tyr Ala Lys Arg His  
1910 1915 1920

a Val Gly Pro Val Val Val His Cys Ser Ala Gly Val Gly Arg  
1925 1930 1935

r Gly Thr Tyr Ile Val Leu Asp Ser Met Leu Gln Gln Ile Gln  
1940 1945 1950

s Glu Gly Thr Val Asn Ile Phe Gly Phe Leu Lys His Ile Arg  
1955 1960 1965

r Gln Arg Asn Tyr Leu Val Gln Thr Glu Glu Gln Tyr Val Phe  
1970 1975 1980

## eolf-seql-S000001.txt

le His Asp Thr Leu Val Glu Ala Ile Leu Ser Lys Glu Thr Glu  
1985 1990 1995

al Leu Asp Ser His Ile His Ala Tyr Val Asn Ala Leu Leu Ile  
2000 2005 2010

ro Gly Pro Ala Gly Lys Thr Lys Leu Glu Lys Gln Phe Gln Leu  
2015 2020 2025

eu Ser Gln Ser Asn Ile Gln Gln Ser Asp Tyr Ser Ala Ala Leu  
2030 2035 2040

ys Gln Cys Asn Arg Glu Lys Asn Arg Thr Ser Ser Ile Ile Pro  
2045 2050 2055

al Glu Arg Ser Arg Val Gly Ile Ser Ser Leu Ser Gly Glu Gly  
2060 2065 2070

ir Asp Tyr Ile Asn Ala Ser Tyr Ile Met Gly Tyr Tyr Gln Ser  
2075 2080 2085

sn Glu Phe Ile Ile Thr Gln His Pro Leu Leu His Thr Ile Lys  
2090 2095 2100

sp Phe Trp Arg Met Ile Trp Asp His Asn Ala Gln Leu Val Val  
2105 2110 2115

et Ile Pro Asp Gly Gln Asn Met Ala Glu Asp Glu Phe Val Tyr  
2120 2125 2130

ip Pro Asn Lys Asp Glu Pro Ile Asn Cys Glu Ser Phe Lys Val  
2135 2140 2145

ir Leu Met Ala Glu Glu His Lys Cys Leu Ser Asn Glu Glu Lys  
2150 2155 2160

u Ile Ile Gln Asp Phe Ile Leu Glu Ala Thr Gln Asp Asp Tyr  
2165 2170 2175

l Leu Glu Val Arg His Phe Gln Cys Pro Lys Trp Pro Asn Pro  
2180 2185 2190

## eolf-seq1-S000001.txt

sp Ser Pro Ile Ser Lys Thr Phe Glu Leu Ile Ser Val Ile Lys  
2195 2200 2205

lu Glu Ala Ala Asn Arg Asp Gly Pro Met Ile Val His Asp Glu  
2210 2215 2220

is Gly Gly Val Thr Ala Gly Thr Phe Cys Ala Leu Thr Thr Leu  
2225 2230 2235

et His Gln Leu Glu Lys Glu Asn Ser Val Asp Val Tyr Gln Val  
2240 2245 2250

la Lys Met Ile Asn Leu Met Arg Pro Gly Val Phe Ala Asp Ile  
2255 2260 2265

lu Gln Tyr Gln Phe Leu Tyr Lys Val Ile Leu Ser Leu Val Ser  
2270 2275 2280

hr Arg Gln Glu Glu Asn Pro Ser Thr Ser Leu Asp Ser Asn Gly  
2285 2290 2295

la Ala Leu Pro Asp Gly Asn Ile Ala Glu Ser Leu Glu Ser Leu  
2300 2305 2310

al

?10> 138  
?11> 372  
?12> PRT  
?13> Homo sapiens

!00> 138

et Lys Gln Leu Pro Val Leu Glu Pro Gly Asp Lys Pro Arg Lys Ala  
5 10 15

ir Trp Tyr Thr Leu Thr Val Pro Gly Asp Ser Pro Cys Ala Arg Val  
20 25 30

.y His Ser Cys Ser Tyr Leu Pro Pro Val Gly Asn Ala Lys Arg Gly  
35 40 45

## eolf-seql-S000001.txt

ys Val Phe Ile Val Gly Gly Ala Asn Pro Asn Arg Ser Phe Ser Asp  
50 55 60

al His Thr Met Asp Leu Gly Lys His Gln Trp Asp Leu Asp Thr Cys  
5 70 75 80

ys Gly Leu Leu Pro Arg Tyr Glu His Ala Ser Phe Ile Pro Ser Cys  
85 90 95

ir Pro Asp Arg Ile Trp Val Phe Gly Gly Ala Asn Gln Ser Gly Asn  
100 105 110

tg Asn Cys Leu Gln Val Leu Asn Pro Glu Thr Arg Thr Trp Thr Thr  
115 120 125

eo Glu Val Thr Ser Pro Pro Ser Pro Arg Thr Phe His Thr Ser  
130 135 140

er Ala Ala Ile Gly Asn Gln Leu Tyr Val Phe Gly Gly Glu Arg  
15 150 155 160

ay Ala Gln Pro Val Gln Asp Thr Lys Leu His Val Phe Asp Ala Asn  
165 170 175

ir Leu Thr Trp Ser Gln Pro Glu Thr Leu Gly Asn Pro Pro Ser Pro  
180 185 190

g His Gly His Val Met Val Ala Ala Gly Thr Lys Leu Phe Ile His  
195 200 205

y Gly Leu Ala Gly Asp Arg Phe Tyr Asp Asp Leu His Cys Ile Asp  
210 215 220

e Ser Asp Met Lys Trp Gln Lys Leu Asn Pro Thr Gly Ala Ala Pro  
5 230 235 240

a Gly Cys Ala Ala His Ser Ala Val Ala Met Gly Lys His Val Tyr  
245 250 255

e Phe Gly Gly Met Thr Pro Ala Gly Ala Leu Asp Thr Met Tyr Gln

## eolf-seql-s000001.txt

260 265 270

yr His Thr Glu Glu Gln His Trp Thr Leu Leu Lys Phe Asp Thr Leu  
275 280 285

eu Pro Pro Gly Arg Leu Asp His Ser Met Cys Ile Ile Pro Trp Pro  
290 295 300

al Thr Cys Ala Ser Glu Lys Glu Asp Ser Asn Ser Leu Thr Leu Asn  
05 310 315 320

is Glu Ala Glu Lys Glu Asp Ser Ala Asp Lys Val Met Ser His Ser  
325 330 335

ly Asp Ser His Glu Glu Ser Gln Thr Ala Thr Leu Leu Cys Leu Val  
340 345 350

he Gly Gly Met Asn Thr Glu Gly Glu Ile Tyr Asp Asp Cys Ile Val  
355 360 365

hr Val Val Asp  
370

210> 139  
211> 425  
212> PRT  
213> Homo sapiens

400> 139

et Ala Asp Lys Glu Ala Ala Phe Asp Asp Ala Val Glu Glu Arg Val  
5 10 15

le Asn Glu Glu Tyr Lys Ile Trp Lys Lys Asn Thr Pro Phe Leu Tyr  
20 25 30

sp Leu Val Met Thr His Ala Leu Glu Trp Pro Ser Leu Thr Ala Gln  
35 40 45

:p Leu Pro Asp Val Thr Arg Pro Glu Gly Lys Asp Phe Ser Ile His  
50 55 60

:g Leu Val Leu Gly Thr His Thr Ser Asp Glu Gln Asn His Leu Val

eolf-seql-S000001.txt  
5 70 75 80

le Ala Ser Val Gln Leu Pro Asn Asp Asp Ala Gln Phe Asp Ala Ser  
85 90 95

is Tyr Asp Ser Glu Lys Gly Glu Phe Gly Gly Phe Gly Ser Val Ser  
100 105 110

ly Lys Ile Glu Ile Glu Ile Lys Ile Asn His Glu Gly Glu Val Asn  
115 120 125

rg Ala Arg Tyr Met Pro Gln Asn Pro Cys Ile Ile Ala Thr Lys Thr  
130 135 140

ro Ser Ser Asp Val Leu Val Phe Asp Tyr Thr Lys His Pro Ser Lys  
45 150 155 160

ro Asp Pro Ser Gly Glu Cys Asn Pro Asp Leu Arg Leu Arg Gly His  
165 170 175

In Lys Glu Gly Tyr Gly Leu Ser Trp Asn Pro Asn Leu Ser Gly His  
180 185 190

eu Leu Ser Ala Ser Asp Asp His Thr Ile Cys Leu Trp Asp Ile Ser  
195 200 205

la Val Pro Lys Glu Gly Lys Val Val Asp Ala Lys Thr Ile Phe Thr  
210 215 220

.y His Thr Ala Val Val Glu Asp Val Ser Trp His Leu Leu His Glu  
225 230 235 240

er Leu Phe Gly Ser Val Ala Asp Asp Gln Lys Leu Met Ile Trp Asp  
245 250 255

ur Arg Ser Asn Asn Thr Ser Lys Pro Ser His Ser Val Asp Ala His  
260 265 270

ur Ala Glu Val Asn Cys Leu Ser Phe Asn Pro Tyr Ser Glu Phe Ile  
275 280 285

## eolf-seql-S000001.txt

eu Ala Thr Gly Ser Ala Asp Lys Thr Val Ala Leu Trp Asp Leu Arg  
290 295 300

sn Leu Lys Leu Lys Leu His Ser Phe Glu Ser His Lys Asp Glu Ile  
05 310 315 320

he Gln Val Gln Trp Ser Pro His Asn Glu Thr Ile Leu Ala Ser Ser  
325 330 335

ly Thr Asp Arg Arg Leu Asn Val Trp Asp Leu Ser Lys Ile Gly Glu  
340 345 350

lu Gln Ser Pro Glu Asp Ala Glu Asp Gly Pro Pro Glu Leu Leu Phe  
355 360 365

le His Gly Gly His Thr Ala Lys Ile Ser Asp Phe Ser Trp Asn Pro  
370 375 380

sn Glu Pro Trp Val Ile Cys Ser Val Ser Glu Asp Asn Ile Met Gln  
85 390 395 400

al Trp Gln Met Ala Glu Asn Ile Tyr Asn Asp Glu Asp Pro Glu Gly  
405 410 415

er Val Asp Pro Glu Gly Gln Gly Ser  
420 425

?10> 140  
?11> 633  
?12> PRT  
?13> Homo sapiens

?100> 140

?et Asn Pro Ser Ala Pro Ser Tyr Pro Met Ala Ser Leu Tyr Val Gly  
5 10 15

?sp Leu His Pro Asp Val Thr Glu Ala Met Leu Tyr Glu Lys Phe Ser  
20 25 30

?o Ala Gly Pro Ile Leu Ser Ile Arg Val Cys Arg Asp Met Ile Thr  
35 40 45

eolf-seql-S000001.txt  
rg Arg Ser Leu Gly Tyr Ala Tyr Val Asn Phe Gln Gln Pro Ala Asp  
50 55 60  
  
la Glu Arg Ala Leu Asp Thr Met Asn Phe Asp Val Ile Lys Gly Lys  
5 70 75 80  
  
ro Val Arg Ile Met Trp Ser Gln Arg Asp Pro Ser Leu Arg Lys Ser  
85 90 95  
  
ly Val Gly Asn Ile Phe Ile Lys Asn Leu Asp Lys Ser Ile Asp Asn  
100 105 110  
  
ys Ala Leu Tyr Asp Thr Phe Ser Ala Phe Gly Asn Ile Leu Ser Cys  
115 120 125  
  
ys Val Val Cys Asp Glu Asn Gly Ser Lys Gly Tyr Gly Phe Val His  
130 135 140  
  
ne Glu Thr Gln Glu Ala Ala Glu Arg Ala Ile Glu Lys Met Asn Gly  
45 150 155 160  
  
et Leu Leu Asn Asp Arg Lys Val Phe Val Gly Arg Phe Lys Ser Arg  
165 170 175  
  
ys Glu Arg Glu Ala Glu Leu Gly Ala Arg Ala Lys Glu Phe Thr Asn  
180 185 190  
  
al Tyr Ile Lys Asn Phe Gly Glu Asp Met Asp Asp Glu Arg Leu Lys  
195 200 205  
  
sp Leu Phe Gly Pro Ala Leu Ser Val Lys Val Met Thr Asp Glu Ser  
210 215 220  
  
.y Lys Ser Lys Gly Phe Gly Phe Val Ser Phe Glu Arg His Glu Asp  
225 230 235 240  
  
.a Gln Lys Ala Val Asp Glu Met Asn Gly Lys Glu Leu Asn Gly Lys  
245 250 255  
  
.n Ile Tyr Val Gly Arg Ala Gln Lys Lys Val Glu Arg Gln Thr Glu  
260 265 270

## eolf-seql-s000001.txt

eu Lys Arg Lys Phe Glu Gln Met Lys Gln Asp Arg Ile Thr Arg Tyr  
275 280 285

ln Gly Val Asn Leu Tyr Val Lys Asn Leu Asp Asp Gly Ile Asp Asp  
290 295 300

lu Arg Leu Arg Lys Glu Phe Ser Pro Phe Gly Thr Ile Thr Ser Ala  
05 310 315 320

ys Val Met Met Glu Gly Gly Arg Ser Lys Gly Phe Gly Phe Val Cys  
325 330 335

he Ser Ser Pro Glu Glu Ala Thr Lys Ala Val Thr Glu Met Asn Gly  
340 345 350

rg Ile Val Ala Thr Lys Pro Leu Tyr Val Ala Leu Ala Gln Arg Lys  
355 360 365

lu Glu Arg Gln Ala His Leu Thr Asn Gln Tyr Met Gln Arg Met Ala  
370 375 380

er Val Arg Ala Val Pro Asn Pro Val Ile Asn Pro Tyr Gln Pro Ala  
35 390 395 400

co Pro Ser Gly Tyr Phe Met Ala Ala Ile Pro Gln Thr Gln Asn Arg  
405 410 415

la Ala Tyr Tyr Pro Pro Ser Gln Val Ala Gln Leu Arg Pro Ser Pro  
420 425 430

sg Trp Thr Ala Gln Gly Ala Arg Pro His Pro Phe Gln Asn Met Pro  
435 440 445

.y Ala Ile Arg Pro Ala Ala Pro Arg Pro Pro Phe Ser Thr Met Arg  
450 455 460

o Ala Ser Ser Gln Val Pro Arg Val Met Ser Thr Gln Arg Val Ala  
45 470 475 480

in Thr Ser Thr Gln Thr Met Gly Pro Arg Pro Ala Ala Ala Ala  
485 490 495

## eolf-seql-S000001.txt

la Ala Thr Pro Ala Val Arg Thr Val Pro Gln Tyr Lys Tyr Ala Ala  
500 505 510

ly Val Arg Asn Pro Gln Gln His Leu Asn Ala Gln Pro Gln Val Thr  
515 520 525

et Gln Gln Pro Ala Val His Val Gln Gly Gln Glu Pro Leu Thr Ala  
530 535 540

er Met Leu Ala Ser Ala Pro Pro Gln Glu Gln Lys Gln Met Leu Gly  
45 550 555 560

lu Arg Leu Phe Pro Leu Ile Gln Ala Met His Pro Thr Leu Ala Gly  
565 570 575

ys Ile Thr Gly Met Leu Leu Glu Ile Asp Asn Ser Glu Leu Leu His  
580 585 590

et Leu Glu Ser Pro Glu Ser Leu Arg Ser Lys Val Asp Glu Ala Val  
595 600 605

la Val Leu Gln Ala His Gln Ala Lys Glu Ala Ala Gln Lys Ala Val  
610 615 620

sn Ser Ala Thr Gly Val Pro Thr Val  
625 630

?10> 141  
?11> 420  
?12> PRT  
?13> Homo sapiens

!00> 141

et Met Tyr Ser Pro Ile Cys Leu Thr Gln Asp Glu Phe His Pro Phe  
5 10 15

t Glu Ala Leu Leu Pro His Val Arg Ala Ile Ala Tyr Thr Trp Phe  
20 25 30

n Leu Gln Ala Arg Lys Arg Lys Tyr Phe Lys Lys His Glu Lys Arg  
35 40 45

## eolf-seql-S000001.txt

et Ser Lys Asp Glu Glu Arg Ala Val Lys Asp Glu Leu Leu Ser Glu  
50 55 60

ys Pro Glu Ile Lys Gln Lys Trp Ala Ser Arg Leu Leu Ala Lys Leu  
5 70 75 80

rg Lys Asp Ile Arg Gln Glu Tyr Arg Glu Asp Phe Val Leu Thr Val  
85 90 95

hr Gly Lys Lys His Pro Cys Cys Val Leu Ser Asn Pro Asp Gln Lys  
100 105 110

ly Lys Ile Arg Arg Ile Asp Cys Leu Arg Gln Ala Asp Lys Val Trp  
115 120 125

rg Leu Asp Leu Val Met Val Ile Leu Phe Lys Gly Ile Pro Leu Glu  
130 135 140

er Thr Asp Gly Glu Arg Leu Met Lys Ser Pro His Cys Thr Asn Pro  
145 150 155 160

la Leu Cys Val Gln Pro His His Ile Thr Val Ser Val Lys Glu Leu  
165 170 175

sp Leu Phe Leu Ala Tyr Tyr Val Gln Glu Gln Asp Ser Gly Gln Ser  
180 185 190

.y Ser Pro Ser His Asn Asp Pro Ala Lys Asn Pro Pro Gly Tyr Leu  
195 200 205

.u Asp Ser Phe Val Lys Ser Gly Val Phe Asn Val Ser Glu Leu Val  
210 215 220

g Val Ser Arg Thr Pro Ile Thr Gln Gly Thr Gly Val Asn Phe Pro  
225 230 235 240

.e Gly Glu Ile Pro Ser Gln Pro Tyr Tyr His Asp Met Asn Ser Gly  
245 250 255

.l Asn Leu Gln Arg Ser Leu Ser Ser Pro Pro Ser Ser Lys Arg Pro

## eolf-seql-S000001.txt

260 265 270

ys Thr Ile Ser Ile Asp Glu Asn Met Glu Pro Ser Pro Thr Gly Asp  
275 280 285

he Tyr Pro Ser Pro Ser Ser Pro Ala Ala Gly Ser Arg Thr Trp His  
290 295 300

lu Arg Asp Gln Asp Met Ser Ser Pro Thr Thr Met Lys Lys Pro Glu  
305 310 315 320

ys Pro Leu Phe Ser Ser Ala Ser Pro Gln Asp Ser Ser Pro Arg Leu  
325 330 335

er Thr Phe Pro Gln His His His Pro Gly Ile Pro Gly Val Ala His  
340 345 350

er Val Ile Ser Thr Arg Thr Pro Pro Pro Pro Ser Pro Leu Pro Phe  
355 360 365

eo Thr Gln Ala Ile Leu Pro Pro Ala Pro Ser Ser Tyr Phe Ser His  
370 375 380

eo Thr Ile Arg Tyr Pro Pro His Leu Asn Pro Gln Asp Thr Leu Lys  
385 390 395 400

en Tyr Val Pro Ser Tyr Asp Pro Ser Ser Pro Gln Thr Ser Gln Ser  
405 410 415

ip Tyr Leu Gly  
420

:10> 142  
:11> 248  
:12> PRT  
:13> Homo sapiens

00> 142

et Glu Gly Val Glu Glu Lys Lys Lys Glu Val Pro Ala Val Pro Glu  
5 . 10 15

r Leu Lys Lys Lys Arg Arg Asn Phe Ala Glu Leu Lys Ile Lys Arg

## eolf-seql-S000001.txt

20 25 30

eu Arg Lys Lys Phe Ala Gln Lys Met Leu Arg Lys Ala Arg Arg Lys  
35 40 45

eu Ile Tyr Glu Lys Ala Lys His Tyr His Lys Glu Tyr Arg Gln Met  
50 55 60

yr Arg Thr Glu Ile Arg Met Ala Arg Met Ala Arg Lys Ala Gly Asn  
5 70 75 80

he Tyr Val Pro Ala Glu Pro Lys Leu Ala Phe Val Ile Arg Ile Arg  
85 90 95

ly Ile Asn Gly Val Ser Pro Lys Val Arg Lys Val Leu Gln Leu Leu  
100 105 110

rg Leu Arg Gln Ile Phe Asn Gly Thr Phe Val Lys Leu Asn Lys Ala  
115 120 125

er Ile Asn Met Leu Arg Ile Val Glu Pro Tyr Ile Ala Trp Gly Tyr  
130 135 140

ro Asn Leu Lys Ser Val Asn Glu Leu Ile Tyr Lys Arg Gly Tyr Gly  
145 150 155 160

/s Ile Asn Lys Lys Arg Ile Ala Leu Thr Asp Asn Ala Leu Ile Ala  
165 170 175

:g Ser Leu Gly Lys Tyr Gly Ile Ile Cys Met Glu Asp Leu Ile His  
180 185 190

.u Ile Tyr Thr Val Gly Lys Arg Phe Lys Glu Ala Asn Asn Phe Leu  
195 200 205

:p Pro Phe Lys Leu Ser Ser Pro Arg Gly Gly Met Lys Lys Lys Thr  
210 215 220

:r His Phe Val Glu Gly Gly Asp Ala Gly Asn Arg Glu Asp Gln Ile  
225 230 235 240

eolf-seql-S000001.txt

sn Arg Leu Ile Arg Arg Met Asn  
245

210> 143  
211> 420  
212> PRT  
213> Homo sapiens

400> 143

et Glu Val Pro Pro Arg Leu Ser His Val Pro Pro Pro Leu Phe Pro  
5 10 15

er Ala Pro Ala Thr Leu Ala Ser Arg Ser Leu Ser His Trp Arg Pro  
20 25 30

cg Pro Pro Arg Gln Leu Ala Pro Leu Leu Pro Ser Leu Ala Pro Ser  
35 40 45

er Ala Arg Gln Gly Ala Arg Arg Ala Gln Arg His Val Thr Ala Gln  
50 55 60

In Pro Ser Arg Leu Ala Gly Gly Ala Ala Ile Lys Gly Gly Arg Arg  
70 75 80

g Arg Pro Asp Leu Phe Arg Arg His Phe Lys Ser Ser Ser Ile Gln  
85 90 95

g Ser Ala Ala Ala Ala Ala Thr Arg Thr Ala Arg Gln His Pro  
100 105 110

o Ala Asp Ser Ser Val Thr Met Glu Asp Met Asn Glu Tyr Ser Asn  
115 120 125

e Glu Glu Phe Ala Glu Gly Ser Lys Ile Asn Ala Ser Lys Asn Gln  
130 135 140

n Asp Asp Gly Lys Met Phe Ile Gly Gly Leu Ser Trp Asp Thr Ser  
5 150 155 160

s Lys Asp Leu Thr Glu Tyr Leu Ser Arg Phe Gly Glu Val Val Asp  
165 170 175

eolf-seql-S000001.txt

ys Thr Ile Lys Thr Asp Pro Val Thr Gly Arg Ser Arg Gly Phe Gly  
180 185 190

he Val Leu Phe Lys Asp Ala Ala Ser Val Asp Lys Val Leu Glu Leu  
195 200 205

ys Glu His Lys Leu Asp Gly Lys Leu Ile Asp Pro Lys Arg Ala Lys  
210 215 220

la Leu Lys Gly Lys Glu Pro Pro Lys Lys Val Phe Val Gly Gly Leu  
25 230 235 240

er Pro Asp Thr Ser Glu Glu Gln Ile Lys Glu Tyr Phe Gly Ala Phe  
245 250 255

ly Glu Ile Glu Asn Ile Glu Leu Pro Met Asp Thr Lys Thr Asn Glu  
260 265 270

rg Arg Gly Phe Cys Phe Ile Thr Tyr Thr Asp Glu Glu Pro Val Lys  
275 280 285

/s Leu Leu Glu Ser Arg Tyr His Gln Ile Gly Ser Gly Lys Cys Glu  
290 295 300

le Lys Val Ala Gln Pro Lys Glu Val Tyr Arg Gln Gln Gln Gln Gln  
310 315 320

.n Lys Gly Gly Arg Gly Ala Ala Ala Gly Gly Arg Gly Gly Thr Arg  
325 330 335

.y Arg Gly Arg Gly Gln Gly Gln Asn Trp Asn Gln Gly Phe Asn Asn  
340 345 350

r Tyr Asp Gln Gly Tyr Gly Asn Tyr Asn Ser Ala Tyr Gly Gly Asp  
355 360 365

n Asn Tyr Ser Gly Tyr Gly Gly Tyr Asp Tyr Thr Gly Tyr Asn Tyr  
370 375 380

y Asn Tyr Gly Tyr Gly Gln Gly Tyr Ala Asp Tyr Ser Gly Gln Gln  
390 395 400

## eolf-seql-S000001.txt

er Thr Tyr Gly Lys Ala Ser Arg Gly Gly Gly Asn His Gln Asn Asn  
405 410 415

yr Gln Pro Tyr  
420

?10> 144  
?11> 46  
?12> PRT  
?13> Homo sapiens

?100> 144

et Leu Leu Ser Arg Gly Val Leu Pro Phe Leu Ser Tyr Met Lys Phe  
5 10 15

eu Ser Gln Glu Arg Gln Asp Tyr Ile Phe Phe Phe Phe Ser Ser  
20 25 30

eu Ser Trp Cys Ser Val Phe Leu Val Ile Arg Ile Leu Ile  
35 40 45

?10> 145  
?11> 76  
?12> PRT  
?13> Homo sapiens

?100> 145

et Ser Lys Ala His Pro Pro Glu Leu Lys Lys Phe Met Asp Lys Lys  
5 10 15

eu Ser Leu Lys Leu Asn Gly Gly Arg His Val Gln Gly Ile Leu Arg  
20 25 30

.y Phe Asp Pro Phe Met Asn Leu Val Ile Asp Glu Cys Val Glu Met  
35 40 45

a Thr Ser Gly Gln Gln Asn Asn Ile Gly Met Val Val Ile Arg Gly  
50 55 60

n Ser Ile Ile Met Leu Glu Ala Leu Glu Arg Val  
70 75

## eolf-seql-S000001.txt

210> 146  
211> 184  
212> PRT  
213> Homo sapiens

400> 146

et Arg Glu Tyr Lys Leu Val Val Leu Gly Ser Gly Gly Val Gly Lys  
5 10 15

er Ala Leu Thr Val Gln Phe Val Gln Gly Ile Phe Val Glu Lys Tyr  
20 25 30

sp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Glu Val Asp Cys  
35 40 45

In Gln Cys Met Leu Glu Ile Leu Asp Thr Ala Gly Thr Glu Gln Phe  
50 55 60

hr Ala Met Arg Asp Leu Tyr Met Lys Asn Gly Gln Gly Phe Ala Leu  
5 70 75 80

al Tyr Ser Ile Thr Ala Gln Ser Thr Phe Asn Asp Leu Gln Asp Leu  
85 90 95

rg Glu Gln Ile Leu Arg Val Lys Asp Thr Glu Asp Val Pro Met Ile  
100 105 110

eu Val Gly Asn Lys Cys Asp Leu Glu Asp Glu Arg Val Val Gly Lys  
115 120 125

lu Gln Gly Gln Asn Leu Ala Arg Gln Trp Cys Asn Cys Ala Phe Leu  
130 135 140

lu Ser Ser Ala Lys Ser Lys Ile Asn Val Asn Glu Ile Phe Tyr Asp  
15 150 155 160

eu Val Arg Gln Ile Asn Arg Lys Thr Pro Val Glu Lys Lys Pro  
165 170 175

's Lys Lys Ser Cys Leu Leu  
180

## eolf-seql-S000001.txt

210> 147  
211> 440  
212> PRT  
213> Homo sapiens

400> 147

et Glu Gln Arg Gly Gln Asn Ala Pro Ala Ala Ser Gly Ala Arg Lys  
5 10 15

rg His Gly Pro Gly Pro Arg Glu Ala Arg Gly Ala Arg Pro Gly Leu  
20 25 30

rg Val Pro Lys Thr Leu Val Leu Val Val Ala Ala Val Leu Leu Leu  
35 40 45

al Ser Ala Glu Ser Ala Leu Ile Thr Gln Gln Asp Leu Ala Pro Gln  
50 55 60

In Arg Ala Ala Pro Gln Gln Lys Arg Ser Ser Pro Ser Glu Gly Leu  
5 70 75 80

/s Pro Pro Gly His His Ile Ser Glu Asp Gly Arg Asp Cys Ile Ser  
85 90 95

/s Lys Tyr Gly Gln Asp Tyr Ser Thr His Trp Asn Asp Leu Leu Phe  
100 105 110

/s Leu Arg Cys Thr Arg Cys Asp Ser Gly Glu Val Glu Leu Ser Pro  
115 120 125

/s Thr Thr Thr Arg Asn Thr Val Cys Gln Cys Glu Glu Gly Thr Phe  
130 135 140

:g Glu Glu Asp Ser Pro Glu Met Cys Arg Lys Cys Arg Thr Gly Cys  
5 150 155 160

:o Arg Gly Met Val Lys Val Gly Asp Cys Thr Pro Trp Ser Asp Ile  
165 170 175

:u Cys Val His Lys Glu Ser Gly Thr Lys His Ser Gly Glu Ala Pro  
180 185 190

## eolf-seql-S000001.txt

la Val Glu Glu Thr Val Thr Ser Ser Pro Gly Thr Pro Ala Ser Pro  
195 200 205

ys Ser Leu Ser Gly Ile Ile Ile Gly Val Thr Val Ala Ala Val Val  
210 215 220

eu Ile Val Ala Val Phe Val Cys Lys Ser Leu Leu Trp Lys Lys Val  
25 230 235 240

eu Pro Tyr Leu Lys Gly Ile Cys Ser Gly Gly Gly Asp Pro Glu  
245 250 255

rg Val Asp Arg Ser Ser Gln Arg Pro Gly Ala Glu Asp Asn Val Leu  
260 265 270

sn Glu Ile Val Ser Ile Leu Gln Pro Thr Gln Val Pro Glu Gln Glu  
275 280 285

st Glu Val Gln Glu Pro Ala Glu Pro Thr Gly Val Asn Met Leu Ser  
290 295 300

eo Gly Glu Ser Glu His Leu Leu Glu Pro Ala Glu Ala Glu Arg Ser  
310 315 320

.n Arg Arg Arg Leu Leu Val Pro Ala Asn Glu Gly Asp Pro Thr Glu  
325 330 335

ir Leu Arg Gln Cys Phe Asp Asp Phe Ala Asp Leu Val Pro Phe Asp  
340 345 350

er Trp Glu Pro Leu Met Arg Lys Leu Gly Leu Met Asp Asn Glu Ile  
355 360 365

's Val Ala Lys Ala Glu Ala Ala Gly His Arg Asp Thr Leu Tyr Thr  
370 375 380

t Leu Ile Lys Trp Val Asn Lys Thr Gly Arg Asp Ala Ser Val His  
5 390 395 400

r Leu Leu Asp Ala Leu Glu Thr Leu Gly Glu Arg Leu Ala Lys Gln  
405 410 415

## eolf-seql-S000001.txt

ys Ile Glu Asp His Leu Leu Ser Ser Gly Lys Phe Met Tyr Leu Glu  
420 425 430

ly Asn Ala Asp Ser Ala Met Ser  
435 440

?10> 148  
?11> 126  
?12> PRT  
?13> Homo sapiens

!00> 148

et Ala Asp Glu Ile Ala Lys Ala Gln Val Ala Arg Pro Gly Gly Asp  
5 10 15

ir Ile Phe Gly Lys Ile Ile Arg Lys Glu Ile Pro Ala Lys Ile Ile  
20 25 30

ie Glu Asp Asp Arg Cys Leu Ala Phe His Asp Ile Ser Pro Gln Ala  
35 40 45

to Thr His Phe Leu Val Ile Pro Lys Lys His Ile Ser Gln Ile Ser  
50 55 60

il Ala Glu Asp Asp Asp Glu Ser Leu Leu Gly His Leu Met Ile Val  
70 75 80

.y Lys Lys Cys Ala Ala Asp Leu Gly Leu Asn Lys Gly Tyr Arg Met  
85 90 95

.l Val Asn Glu Gly Ser Asp Gly Gly Gln Ser Val Tyr His Val His  
100 105 110

u His Val Leu Gly Gly Arg Gln Met His Trp Pro Pro Gly  
115 120 125

10> 149  
11> 320  
12> PRT  
13> Homo sapiens

00> 149

eolf-seql-S000001.txt  
et Ala Glu Gly Asp Ala Gly Ser Asp Gln Arg Gln Asn Glu Glu Ile  
5 10 15

lu Ala Met Ala Ala Ile Tyr Gly Glu Glu Trp Cys Val Ile Asp Asp  
20 25 30

ys Ala Lys Ile Phe Cys Ile Arg Ile Ser Asp Asp Ile Asp Asp Pro  
35 40 45

ys Trp Thr Leu Cys Leu Gln Val Met Leu Pro Asn Glu Tyr Pro Gly  
50 55 60

hr Ala Pro Pro Ile Tyr Gln Leu Asn Ala Pro Trp Leu Lys Gly Gln  
5 70 75 80

lu Arg Ala Asp Leu Ser Asn Ser Leu Glu Glu Ile Tyr Ile Gln Asn  
85 90 95

le Gly Glu Ser Ile Leu Tyr Leu Trp Val Glu Lys Ile Arg Asp Val  
100 105 110

eu Ile Gln Lys Ser Gln Met Thr Glu Pro Gly Pro Asp Val Lys Lys  
115 120 125

/s Thr Glu Glu Asp Val Glu Cys Glu Asp Asp Leu Ile Leu Ala  
130 135 140

/s Gln Pro Glu Ser Ser Val Lys Ala Leu Asp Phe Asp Ile Ser Glu  
145 150 155 160

ir Arg Thr Glu Val Glu Val Glu Leu Pro Pro Ile Asp His Gly  
165 170 175

.e Pro Ile Thr Asp Arg Arg Ser Thr Phe Gln Ala His Leu Ala Pro  
180 185 190

il Val Cys Pro Lys Gln Val Lys Met Val Leu Ser Lys Leu Tyr Glu  
195 200 205

:n Lys Lys Ile Ala Ser Ala Thr His Asn Ile Tyr Ala Tyr Arg Ile  
210 215 220

## eolf-seql-S000001.txt

yr Cys Glu Asp Lys Gln Thr Phe Leu Gln Asp Cys Glu Asp Asp Gly  
25 230 235 240

lu Thr Ala Ala Gly Gly Arg Leu Leu His Leu Met Glu Ile Leu Asn  
245 250 255

al Lys Asn Val Met Val Val Ser Arg Trp Tyr Gly Gly Ile Leu  
260 265 270

eu Gly Pro Asp Arg Phe Lys His Ile Asn Asn Cys Ala Arg Asn Ile  
275 280 285

eu Val Glu Lys Asn Tyr Thr Asn Ser Pro Glu Glu Ser Ser Lys Ala  
290 295 300

eu Gly Lys Asn Lys Lys Val Arg Lys Asp Lys Lys Arg Asn Glu His  
305 310 315 320

?10> 150

?11> 326

?12> PRT

?13> Homo sapiens

!00> 150

et His Arg Thr Thr Arg Ile Lys Ile Thr Glu Leu Asn Pro His Leu  
5 10 15

et Cys Val Leu Cys Gly Gly Tyr Phe Ile Asp Ala Thr Thr Ile Ile  
20 25 30

lu Cys Leu His Ser Phe Cys Lys Thr Cys Ile Val Arg Tyr Leu Glu  
35 40 45

ir Ser Lys Tyr Cys Pro Ile Cys Asp Val Gln Val His Lys Thr Arg  
50 55 60

o Leu Leu Asn Ile Arg Ser Asp Lys Thr Leu Gln Asp Ile Val Tyr  
70 75 80

s Leu Val Pro Gly Leu Phe Lys Asn Glu Met Lys Arg Arg Arg Asp  
85 90 95

## eolf-seql-S000001.txt

ne Tyr Ala Ala His Pro Ser Ala Asp Ala Ala Asn Gly Ser Asn Glu  
100 105 110

sp Arg Gly Glu Val Ala Asp Glu Asp Lys Arg Ile Ile Thr Asp Asp  
115 120 125

lu Ile Ile Ser Leu Ser Ile Glu Phe Phe Asp Gln Asn Arg Leu Asp  
130 135 140

sg Lys Val Asn Lys Asp Lys Glu Lys Ser Lys Glu Glu Val Asn Asp  
15 150 155 160

/s Arg Tyr Leu Arg Cys Pro Ala Ala Met Thr Val Met His Leu Arg  
165 170 175

/s Phe Leu Arg Ser Lys Met Asp Ile Pro Asn Thr Phe Gln Ile Asp  
180 185 190

al Met Tyr Glu Glu Glu Pro Leu Lys Asp Tyr Tyr Thr Leu Met Asp  
195 200 205

.e Ala Tyr Ile Tyr Thr Trp Arg Arg Asn Gly Pro Leu Pro Leu Lys  
210 215 220

r Arg Val Arg Pro Thr Cys Lys Arg Met Lys Ile Ser His Gln Arg  
230 235 240

sp Gly Leu Thr Asn Ala Gly Glu Leu Glu Ser Asp Ser Gly Ser Asp  
245 250 255

s Ala Asn Ser Pro Ala Gly Gly Ile Pro Ser Thr Ser Ser Cys Leu  
260 265 270

o Ser Pro Ser Thr Pro Val Gln Ser Pro His Pro Gln Phe Pro His  
275 280 285

e Ser Ser Thr Met Asn Gly Thr Ser Asn Ser Pro Ser Gly Asn His  
290 295 300

n Ser Ser Phe Ala Asn Arg Pro Arg Lys Ser Ser Val Asn Gly Ser  
5 310 315 320

## eolf-seql-S000001.txt

er Ala Thr Ser Ser Gly  
325

210> 151  
211> 466  
212> PRT  
213> Homo sapiens

400> 151

et Val Met Glu Lys Pro Ser Pro Leu Leu Val Gly Arg Glu Phe Val  
5 10 15

rg Gln Tyr Tyr Thr Leu Leu Asn Gln Ala Pro Asp Met Leu His Arg  
20 25 30

re Tyr Gly Lys Asn Ser Ser Tyr Val His Gly Gly Leu Asp Ser Asn  
35 40 45

ly Lys Pro Ala Asp Ala Val Tyr Gly Gln Lys Glu Ile His Arg Lys  
50 55 60

al Met Ser Gln Asn Phe Thr Asn Cys His Thr Lys Ile Arg His Val  
; 70 75 80

sp Ala His Ala Thr Leu Asn Asp Gly Val Val Val Gln Val Met Gly  
85 90 95

eu Leu Ser Asn Asn Gln Ala Leu Arg Arg Phe Met Gln Thr Phe  
100 105 110

al Leu Ala Pro Glu Gly Ser Val Ala Asn Lys Phe Tyr Val His Asn  
115 120 125

sp Ile Phe Arg Tyr Gln Asp Glu Val Phe Gly Gly Phe Val Thr Glu  
130 135 140

o Gln Glu Glu Ser Glu Glu Glu Val Glu Glu Pro Glu Glu Arg Gln  
5 150 155 160

n Thr Pro Glu Val Val Pro Asp Asp Ser Gly Thr Phe Tyr Asp Gln  
165 170 175

## eolf-seql-S000001.txt

la Val Val Ser Asn Asp Met Glu Glu His Leu Glu Glu Pro Val Ala  
180 185 190

lu Pro Glu Pro Asp Pro Glu Pro Glu Pro Glu Gln Glu Pro Val Ser  
195 200 205

lu Ile Gln Glu Glu Lys Pro Glu Pro Val Leu Glu Glu Thr Ala Pro  
210 215 220

lu Asp Ala Gln Lys Ser Ser Ser Pro Ala Pro Ala Asp Ile Ala Gln  
25 230 235 240

ir Val Gln Glu Asp Leu Arg Thr Phe Ser Trp Ala Ser Val Thr Ser  
245 250 255

/s Asn Leu Pro Pro Ser Gly Ala Val Pro Val Thr Gly Ile Pro Pro  
260 265 270

.s Val Val Lys Val Pro Ala Ser Gln Pro Arg Pro Glu Ser Lys Pro  
275 280 285

.u Ser Gln Ile Pro Pro Gln Arg Pro Gln Arg Asp Gln Arg Val Arg  
290 295 300

.u Gln Arg Ile Asn Ile Pro Pro Gln Arg Gly Pro Arg Pro Ile Arg  
15 310 315 320

.u Ala Gly Glu Gln Gly Asp Ile Glu Pro Arg Arg Met Val Arg His  
325 330 335

o Asp Ser His Gln Leu Phe Ile Gly Asn Leu Pro His Glu Val Asp  
340 345 350

's Ser Glu Leu Lys Asp Phe Phe Gln Ser Tyr Gly Asn Val Val Glu  
355 360 365

u Arg Ile Asn Ser Gly Gly Lys Leu Pro Asn Phe Gly Phe Val Val  
370 375 380

e Asp Asp Ser Glu Pro Val Gln Lys Val Leu Ser Asn Arg Pro Ile

eolf-seql-S000001.txt

35	390	395	400
----	-----	-----	-----

et Phe Arg Gly Glu Val Arg Leu Asn Val Glu Glu Lys Lys Thr Arg  
405 410 415

Ia Ala Arg Glu Gly Asp Arg Asp Asn Arg Leu Arg Gly Pro Gly  
420 425 430

ly Pro Arg Gly Gly Leu Gly Gly Met Arg Gly Pro Pro Arg Gly  
435 440 445

ly Met Val Gln Lys Pro Gly Phe Gly Val Gly Arg Gly Leu Ala Pro  
450 455 460

:g Gln  
65

?10> 152  
?11> 184  
?12> PRT  
?13> Homo sapiens

100> 152

et Pro Gln Ser Lys Ser Arg Lys Ile Ala Ile Leu Gly Tyr Arg Ser  
5 10 15

al Gly Lys Ser Ser Leu Thr Ile Gln Phe Val Glu Gly Gln Phe Val  
20 25 30

ip Ser Tyr Asp Pro Thr Ile Glu Asn Thr Phe Thr Lys Leu Ile Thr  
35 40 45

l Asn Gly Gln Glu Tyr His Leu Gln Leu Val Asp Thr Ala Gly Gln  
50 55 60

p Glu Tyr Ser Ile Phe Pro Gln Thr Tyr Ser Ile Asp Ile Asn Gly  
70 75 80

r Ile Leu Val Tyr Ser Val Thr Ser Ile Lys Ser Phe Glu Val Ile  
85 90 95

s Val Ile His Gly Lys Leu Leu Asp Met Val Gly Lys Val Gln Ile

## eolf-seql-S000001.txt

100 105 110

ro Ile Met Leu Val Gly Asn Lys Lys Asp Leu His Met Glu Arg Val  
115 120 125

le Ser Tyr Glu Glu Gly Lys Ala Leu Ala Glu Ser Trp Asn Ala Ala  
130 135 140

ne Leu Glu Ser Ser Ala Lys Glu Asn Gln Thr Ala Val Asp Val Phe  
45 150 155 160

rg Arg Ile Ile Leu Glu Ala Glu Lys Met Asp Gly Ala Ala Ser Gln  
165 170 175

ly Lys Ser Ser Cys Ser Val Met  
180

?10> 153

?11> 332

?12> PRT

?13> Homo sapiens

100> 153

et Gly Ala Gln Phe Ser Lys Thr Ala Ala Lys Gly Glu Ala Ala Ala  
5 10 15

.u Arg Pro Gly Glu Ala Ala Val Ala Ser Ser Pro Ser Lys Ala Asn  
20 25 30

.y Gln Glu Asn Gly His Val Lys Val Asn Gly Asp Ala Ser Pro Ala  
35 40 45

.a Ala Glu Ser Gly Ala Lys Glu Glu Leu Gln Ala Asn Gly Ser Ala  
50 55 60

.o Ala Ala Asp Lys Glu Glu Pro Ala Ala Gly Ser Gly Ala Ala  
70 75 80

r Pro Ser Ser Ala Glu Lys Gly Glu Pro Ala Ala Ala Ala Pro  
85 90 95

u Ala Gly Ala Ser Pro Val Glu Lys Glu Ala Pro Ala Glu Gly Glu

## eolf-seql-S000001.txt

100 105 110

la Ala Glu Pro Gly Ser Ala Thr Ala Ala Glu Gly Glu Ala Ala Ser  
115 120 125

la Ala Ser Ser Thr Ser Ser Pro Lys Ala Glu Asp Gly Ala Thr Pro  
130 135 140

er Pro Ser Asn Glu Thr Pro Lys Lys Lys Lys Lys Arg Phe Ser Phe  
145 150 155 160

/s Lys Ser Phe Lys Leu Ser Gly Phe Ser Phe Lys Lys Asn Lys Lys  
165 170 175

lu Ala Gly Glu Gly Glu Ala Glu Ala Pro Ala Ala Glu Gly Gly  
180 185 190

/s Asp Glu Ala Ala Gly Gly Ala Ala Ala Ala Ala Glu Ala Gly  
195 200 205

.a Ala Ser Gly Glu Gln Ala Ala Ala Pro Gly Glu Glu Ala Ala Ala  
210 215 220

.y Glu Glu Gly Ala Ala Gly Gly Asp Pro Gln Glu Ala Lys Pro Gln  
215 230 235 240

.u Ala Ala Val Ala Pro Glu Lys Pro Pro Ala Ser Asp Glu Thr Lys  
245 250 255

.a Ala Glu Glu Pro Ser Lys Val Glu Glu Lys Lys Ala Glu Glu Ala  
260 265 270

y Ala Ser Ala Ala Ala Cys Glu Ala Pro Ser Ala Ala Gly Pro Gly  
275 280 285

a Pro Pro Glu Gln Glu Ala Ala Pro Ala Glu Glu Pro Ala Ala Ala  
290 295 300

a Ala Ser Ser Ala Cys Ala Ala Pro Ser Gln Glu Ala Gln Pro Glu  
5 310 315 320

eolf-seql-S000001.txt  
ys Ser Pro Glu Ala Pro Pro Ala Glu Ala Ala Glu  
325 330

?10> 154  
?11> 86  
?12> PRT  
?13> Homo sapiens

?00> 154

et Pro Gln Tyr Gln Thr Trp Glu Glu Phe Ser Arg Ala Ala Glu Lys  
5 10 15

eu Tyr Leu Ala Asp Pro Met Lys Ala Arg Val Val Leu Lys Tyr Arg  
20 25 30

is Ser Asp Gly Asn Leu Cys Val Lys Val Thr Asp Asp Leu Val Cys  
35 40 45

eu Val Tyr Lys Thr Asp Gln Ala Gln Asp Val Lys Lys Ile Glu Lys  
50 55 60

ie His Ser Gln Leu Met Arg Leu Met Val Ala Lys Glu Ala Arg Asn  
; 70 75 80

al Thr Met Glu Thr Glu  
85

?10> 155  
?11> 480  
?12> PRT  
?13> Homo sapiens

?00> 155

et Ile Arg Ala Ala Pro Pro Pro Leu Phe Leu Leu Leu Leu Leu  
5 10 15

u Leu Leu Val Ser Trp Ala Ser Arg Gly Glu Ala Ala Pro Asp Gln  
20 25 30

p Glu Ile Gln Arg Leu Pro Gly Leu Ala Lys Gln Pro Ser Phe Arg  
35 40 45

n Tyr Ser Gly Tyr Leu Lys Ser Ser Gly Ser Lys His Leu His Tyr

eolf-seql-S000001.txt  
50 55 60

:p Phe Val Glu Ser Gln Lys Asp Pro Glu Asn Ser Pro Val Val Leu  
; 70 75 80

:p Leu Asn Gly Gly Pro Gly Cys Ser Ser Leu Asp Gly Leu Leu Thr  
85 90 95

:u His Gly Pro Phe Leu Val Gln Pro Asp Gly Val Thr Leu Glu Tyr  
100 105 110

:n Pro Tyr Ser Trp Asn Leu Ile Ala Asn Val Leu Tyr Leu Glu Ser  
115 120 125

:o Ala Gly Val Gly Phe Ser Tyr Ser Asp Asp Lys Phe Tyr Ala Thr  
130 135 140

:n Asp Thr Glu Val Ala Gln Ser Asn Phe Glu Ala Leu Gln Asp Phe  
15 150 155 160

:e Arg Leu Phe Pro Glu Tyr Lys Asn Asn Lys Leu Phe Leu Thr Gly  
165 170 175

:u Ser Tyr Ala Gly Ile Tyr Ile Pro Thr Leu Ala Val Leu Val Met  
180 185 190

:n Asp Pro Ser Met Asn Leu Gln Gly Leu Ala Val Gly Asn Gly Leu  
195 200 205

:r Ser Tyr Glu Gln Asn Asp Asn Ser Leu Val Tyr Phe Ala Tyr Tyr  
210 215 220

:s Gly Leu Leu Gly Asn Arg Leu Trp Ser Ser Leu Gln Thr His Cys  
5 230 235 240

:s Ser Gln Asn Lys Cys Asn Phe Tyr Asp Asn Lys Asp Leu Glu Cys  
245 250 255

:l Thr Asn Leu Gln Glu Val Ala Arg Ile Val Gly Asn Ser Gly Leu  
260 265 270

eolf-seql-S000001.txt

sn Ile Tyr Asn Leu Tyr Ala Pro Cys Ala Gly Gly Val Pro Ser His  
275 280 285

ie Arg Tyr Glu Lys Asp Thr Val Val Val Gln Asp Leu Gly Asn Ile  
290 295 300

ie Thr Arg Leu Pro Leu Lys Arg Met Trp His Gln Ala Leu Leu Arg  
310 315 320

er Gly Asp Lys Val Arg Met Asp Pro Pro Cys Thr Asn Thr Thr Ala  
325 330 335

a Ser Thr Tyr Leu Asn Asn Pro Tyr Val Arg Lys Ala Leu Asn Ile  
340 345 350

o Glu Gln Leu Pro Gln Trp Asp Met Cys Asn Phe Leu Val Asn Leu  
355 360 365

n Tyr Arg Arg Leu Tyr Arg Ser Met Asn Ser Gln Tyr Leu Lys Leu  
370 375 380

u Ser Ser Gln Lys Tyr Gln Ile Leu Leu Tyr Asn Gly Asp Val Asp  
390 395 400

t Ala Cys Asn Phe Met Gly Asp Glu Trp Phe Val Asp Ser Leu Asn  
405 410 415

n Lys Met Glu Val Gln Arg Arg Pro Trp Leu Val Lys Tyr Gly Asp  
420 425 430

r Gly Glu Gln Ile Ala Gly Phe Val Lys Glu Phe Ser His Ile Ala  
435 440 445

e Leu Thr Ile Lys Gly Ala Gly His Met Val Pro Thr Asp Lys Pro  
450 455 460

u Ala Ala Phe Thr Met Phe Ser Arg Phe Leu Asn Lys Gln Pro Tyr  
470 475 480

10> 156  
11> 217  
12> PRT

eolf-seql-S000001.txt  
213> Homo sapiens  
100> 156  
et Glu Ala Ile Ala Lys Tyr Asp Phe Lys Ala Thr Ala Asp Asp Glu  
5 10 15  
eu Ser Phe Lys Arg Gly Asp Ile Leu Lys Val Leu Asn Glu Glu Cys  
20 25 30  
sp Gln Asn Trp Tyr Lys Ala Glu Leu Asn Gly Lys Asp Gly Phe Ile  
35 40 45  
eo Lys Asn Tyr Ile Glu Met Lys Pro His Pro Trp Phe Phe Gly Lys  
50 55 60  
e Pro Arg Ala Lys Ala Glu Glu Met Leu Ser Lys Gln Arg His Asp  
70 75 80  
y Ala Phe Leu Ile Arg Glu Ser Glu Ser Ala Pro Gly Asp Phe Ser  
85 90 95  
eu Ser Val Lys Phe Gly Asn Asp Val Gln His Phe Lys Val Leu Arg  
100 105 110  
p Gly Ala Gly Lys Tyr Phe Leu Trp Val Val Lys Phe Asn Ser Leu  
115 120 125  
n Glu Leu Val Asp Tyr His Arg Ser Thr Ser Val Ser Arg Asn Gln  
130 135 140  
n Ile Phe Leu Arg Asp Ile Glu Gln Val Pro Gln Gln Pro Thr Tyr  
5 150 155 160  
l Gln Ala Leu Phe Asp Phe Asp Pro Gln Glu Asp Gly Glu Leu Gly  
165 170 175  
e Arg Arg Gly Asp Phe Ile His Val Met Asp Asn Ser Asp Pro Asn  
180 185 190  
p Trp Lys Gly Ala Cys His Gly Gln Thr Gly Met Phe Pro Arg Asn  
195 200 205

## eolf-seql-S000001.txt

?r Val Thr Pro Val Asn Arg Asn Val  
210 215

?10> 157  
?11> 704  
?12> PRT  
?13> Homo sapiens

!00> 157

?t Ala Arg Glu Leu Arg Ala Leu Leu Leu Trp Gly Arg Arg Leu Arg  
5 10 15

?o Leu Leu Arg Ala Pro Ala Leu Ala Ala Val Pro Gly Gly Lys Pro  
20 25 30

?e Leu Cys Pro Arg Arg Thr Thr Ala Gln Leu Gly Pro Arg Arg Asn  
35 40 45

?o Ala Trp Ser Leu Gln Ala Gly Arg Leu Phe Ser Thr Gln Thr Ala  
50 55 60

?u Asp Lys Glu Glu Pro Leu His Ser Ile Ile Ser Ser Thr Glu Ser  
; 70 75 80

?l Gln Gly Ser Thr Ser Lys His Glu Phe Gln Ala Glu Thr Lys Lys  
85 90 95

?u Leu Asp Ile Val Ala Arg Ser Leu Tyr Ser Glu Lys Glu Val Phe  
100 105 110

?e Arg Glu Leu Ile Ser Asn Ala Ser Asp Ala Leu Glu Lys Leu Arg  
115 120 125

?s Lys Leu Val Ser Asp Gly Gln Ala Leu Pro Glu Met Glu Ile His  
130 135 140

?u Gln Thr Asn Ala Glu Lys Gly Thr Ile Thr Ile Gln Asp Thr Gly  
5 150 155 160

?e Gly Met Thr Gln Glu Glu Leu Val Ser Asn Leu Gly Thr Ile Ala  
165 170 175

## eolf-seql-S000001.txt

sg Ser Gly Ser Lys Ala Phe Leu Asp Ala Leu Gln Asn Gln Ala Glu  
180 185 190

la Ser Ser Lys Ile Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala  
195 200 205

re Met Val Ala Asp Arg Val Glu Val Tyr Ser Arg Ser Ala Ala Pro  
210 215 220

ly Ser Leu Gly Tyr Gln Trp Leu Ser Asp Gly Ser Gly Val Phe Glu  
225 230 235 240

.e Ala Glu Ala Ser Gly Val Arg Thr Gly Thr Lys Ile Ile Ile His  
245 250 255

eu Lys Ser Asp Cys Lys Glu Phe Ser Ser Glu Ala Arg Val Arg Asp  
260 265 270

il Val Thr Lys Tyr Ser Asn Phe Val Ser Phe Pro Leu Tyr Leu Asn  
275 280 285

.y Arg Arg Met Asn Thr Leu Gln Ala Ile Trp Met Met Asp Pro Lys  
290 295 300

ip Val Gly Glu Trp Gln His Glu Glu Phe Tyr Arg Tyr Val Ala Gln  
295 310 315 320

a His Asp Lys Pro Arg Tyr Thr Leu His Tyr Lys Thr Asp Ala Pro  
325 330 335

u Asn Ile Arg Ser Ile Phe Tyr Val Pro Asp Met Lys Pro Ser Met  
340 345 350

e Asp Val Ser Arg Glu Leu Gly Ser Ser Val Ala Leu Tyr Ser Arg  
355 360 365

s Val Leu Ile Gln Thr Lys Ala Thr Asp Ile Leu Pro Lys Trp Leu  
370 375 380

g Phe Ile Arg Gly Val Val Asp Ser Glu Asp Ile Pro Leu Asn Leu  
390 395 400

## eolf-seql-S000001.txt

er Arg Glu Leu Leu Gln Glu Ser Ala Leu Ile Arg Lys Leu Arg Asp  
405 410 415

il Leu Gln Gln Arg Leu Ile Lys Phe Phe Ile Asp Gln Ser Lys Lys  
420 425 430

sp Ala Glu Lys Tyr Ala Lys Phe Phe Glu Asp Tyr Gly Leu Phe Met  
435 440 445

g Glu Gly Ile Val Thr Ala Thr Glu Gln Glu Val Lys Glu Asp Ile  
450 455 460

a Lys Leu Leu Arg Tyr Glu Ser Ser Ala Leu Pro Ser Gly Gln Leu  
45 470 475 480

ir Ser Leu Ser Glu Tyr Ala Ser Arg Met Arg Ala Gly Thr Arg Asn  
485 490 495

e Tyr Tyr Leu Cys Ala Pro Asn Arg His Leu Ala Glu His Ser Pro  
500 505 510

r Tyr Glu Ala Met Lys Lys Asp Thr Glu Val Leu Phe Cys Phe  
515 520 525

u Gln Phe Asp Glu Leu Thr Leu Leu His Leu Arg Glu Phe Asp Lys  
530 535 540

s Lys Leu Ile Ser Val Glu Thr Asp Ile Val Val Asp His Tyr Lys  
55 550 555 560

u Glu Lys Phe Glu Asp Arg Ser Pro Ala Ala Glu Cys Leu Ser Glu  
565 570 575

s Glu Thr Glu Glu Leu Met Ala Trp Met Arg Asn Val Leu Gly Ser  
580 585 590

g Val Thr Asn Val Lys Val Thr Leu Arg Leu Asp Thr His Pro Ala  
595 600 605

t Val Thr Val Leu Glu Met Gly Ala Ala Arg His Phe Leu Arg Met

610 eolf-seql-S000001.txt  
615 620

ln Gln Leu Ala Lys Thr Gln Glu Glu Arg Ala Gln Leu Leu Gln Pro  
25 630 635 640

hr Leu Glu Ile Asn Pro Arg His Ala Leu Ile Lys Lys Leu Asn Gln  
645 650 655

eu Arg Ala Ser Glu Pro Gly Leu Ala Gln Leu Leu Val Asp Gln Ile  
660 665 670

yr Glu Asn Ala Met Ile Ala Ala Gly Leu Val Asp Asp Pro Arg Ala  
675 680 685

et Val Gly Arg Leu Asn Glu Leu Leu Val Lys Ala Leu Glu Arg His  
690 695 700

?10> 158

?11> 359

?12> PRT

?13> Homo sapiens

.00> 158

t Ala Ala Val Ser Gly Leu Val Arg Arg Pro Leu Arg Glu Val Ser  
5 10 15

y Leu Leu Lys Arg Arg Phe His Trp Thr Ala Pro Ala Ala Leu Gln  
20 25 30

l Thr Val Arg Asp Ala Ile Asn Gln Gly Met Asp Glu Glu Leu Glu  
35 40 45

g Asp Glu Lys Val Phe Leu Leu Gly Glu Glu Val Ala Gln Tyr Asp  
50 55 60

f Ala Tyr Lys Val Ser Arg Gly Leu Trp Lys Lys Tyr Gly Asp Lys  
70 75 80

; Ile Ile Asp Thr Pro Ile Ser Glu Met Gly Phe Ala Gly Ile Ala  
85 90 95

Gly Ala Ala Met Ala Gly Leu Arg Pro Ile Cys Glu Phe Met Thr

## eolf-seql-S000001.txt

100 105 110

ne Asn Phe Ser Met Gln Ala Ile Asp Gln Val Ile Asn Ser Ala Ala  
115 120 125

ys Thr Tyr Tyr Met Ser Gly Gly Leu Gln Pro Val Pro Ile Val Phe  
130 135 140

sg Gly Pro Asn Gly Ala Ser Ala Gly Val Ala Ala Gln His Ser Gln  
145 150 155 160

ys Phe Ala Ala Trp Tyr Gly His Cys Pro Gly Leu Lys Val Val Ser  
165 170 175

eo Trp Asn Ser Glu Asp Ala Lys Gly Leu Ile Lys Ser Ala Ile Arg  
180 185 190

sp Asn Asn Pro Val Val Val Leu Glu Asn Glu Leu Met Tyr Gly Val  
195 200 205

eo Phe Glu Phe Leu Pro Glu Ala Gln Ser Lys Asp Phe Leu Ile Pro  
210 215 220

le Gly Lys Ala Lys Ile Glu Arg Gln Gly Thr His Ile Thr Val Val  
225 230 235 240

er His Ser Arg Pro Val Gly His Cys Leu Glu Ala Ala Ala Val Leu  
245 250 255

er Lys Glu Gly Val Glu Cys Glu Val Ile Asn Met Arg Thr Ile Arg  
260 265 270

eo Met Asp Met Glu Thr Ile Glu Ala Ser Val Met Lys Thr Asn His  
275 280 285

u Val Thr Val Glu Gly Gly Trp Pro Gln Phe Gly Val Gly Ala Glu  
290 295 300

e Cys Ala Arg Ile Met Glu Gly Pro Ala Phe Asn Phe Leu Asp Ala  
305 310 315 320

eolf-seql-S000001.txt  
:o Ala Val Arg Val Thr Gly Ala Asp Val Pro Met Pro Tyr Ala Lys  
325 330 335  
  
.e Leu Glu Asp Asn Ser Ile Pro Gln Val Lys Asp Ile Ile Phe Ala  
340 345 350  
  
.e Lys Lys Thr Leu Asn Ile  
355  
  
:10> 159  
:11> 113  
:12> PRT  
:13> Homo sapiens  
  
00> 159  
  
.t Ser Ala Ser Val Val Ser Val Ile Ser Arg Phe Leu Glu Glu Tyr  
5 10 15  
  
.u Ser Ser Thr Pro Gln Arg Leu Lys Leu Leu Asp Ala Tyr Leu Leu  
20 25 30  
  
.r Ile Leu Leu Thr Gly Ala Leu Gln Phe Gly Tyr Cys Leu Leu Val  
35 40 45  
  
.y Thr Phe Pro Phe Asn Ser Phe Leu Ser Gly Phe Ile Ser Cys Val  
50 55 60  
  
.y Ser Phe Ile Leu Ala Val Cys Leu Arg Ile Gln Ile Asn Pro Gln  
70 75 80  
  
.n Lys Ala Asp Phe Gln Gly Ile Ser Pro Glu Arg Ala Phe Ala Asp  
85 90 95  
  
.e Leu Phe Ala Ser Thr Ile Leu His Leu Val Val Met Asn Phe Val  
100 105 110  
  
y

10> 160  
11> 239  
12> PRT  
13> Homo sapiens

## eolf-seql-S000001.txt

400> 160

et Ala Lys Pro Cys Gly Val Arg Leu Ser Gly Glu Ala Arg Lys Gln  
5 10 15

al Glu Val Phe Arg Gln Asn Leu Phe Gln Glu Ala Glu Glu Phe Leu  
20 25 30

r Arg Phe Leu Pro Gln Lys Ile Ile Tyr Leu Asn Gln Leu Leu Gln  
35 40 45

lu Asp Ser Leu Asn Val Ala Asp Leu Thr Ser Leu Arg Ala Pro Leu  
50 55 60

sp Ile Pro Ile Pro Asp Pro Pro Pro Lys Asp Asp Glu Met Glu Thr  
70 75 80

sp Lys Gln Glu Lys Lys Glu Val His Lys Cys Gly Phe Leu Pro Gly  
85 90 95

in Glu Lys Val Leu Ser Leu Leu Ala Leu Val Lys Pro Glu Val Trp  
100 105 110

ir Leu Lys Glu Lys Cys Ile Leu Val Ile Thr Trp Ile Gln His Leu  
115 120 125

e Pro Lys Ile Glu Asp Gly Asn Asp Phe Gly Val Ala Ile Gln Glu  
130 135 140

s Val Leu Glu Arg Val Asn Ala Val Lys Thr Lys Val Glu Ala Phe  
5 150 155 160

n Thr Thr Ile Ser Lys Tyr Phe Ser Glu Arg Gly Asp Ala Val Ala  
165 170 175

s Ala Ser Lys Glu Thr His Val Met Asp Tyr Arg Ala Leu Val His  
180 185 190

u Arg Asp Glu Ala Ala Tyr Gly Glu Leu Arg Ala Met Val Leu Asp  
195 200 205

eolf-seql-S000001.txt

eu Arg Ala Phe Tyr Ala Glu Leu Tyr His Ile Ile Ser Ser Asn Leu  
210 215 220

lu Lys Ile Val Asn Pro Lys Gly Glu Glu Lys Pro Ser Met Tyr  
25 230 235

?10> 161  
?11> 111  
?12> PRT  
?13> Homo sapiens

!00> 161

et Ala Gly Lys Gln Ala Val Ser Ala Ser Gly Lys Trp Leu Asp Gly  
5 10 15

.e Arg Lys Trp Tyr Tyr Asn Ala Ala Gly Phe Asn Lys Leu Gly Leu  
20 25 30

.t Arg Asp Asp Thr Ile Tyr Glu Asp Glu Asp Val Lys Glu Ala Ile  
35 40 45

:g Arg Leu Pro Glu Asn Leu Tyr Asn Asp Arg Met Phe Arg Ile Lys  
50 55 60

:g Ala Leu Asp Leu Asn Leu Lys His Gln Ile Leu Pro Lys Glu Gln  
70 75 80

p Thr Lys Tyr Glu Glu Asn Phe Tyr Leu Glu Pro Tyr Leu Lys  
85 90 95

u Val Ile Arg Glu Arg Lys Glu Arg Glu Glu Trp Ala Lys Lys  
100 105 110

10> 162  
11> 106  
12> PRT  
13> Homo sapiens

00> 162

t Ser Ser Leu Ser Glu Tyr Ala Phe Arg Met Ser Arg Leu Ser Ala  
5 10 15

g Leu Phe Gly Glu Val Thr Arg Pro Thr Asn Ser Lys Ser Met Lys

## eolf-seql-S000001.txt

20 25 30

al Val Lys Leu Phe Ser Glu Leu Pro Leu Ala Lys Lys Lys Glu Thr  
35 40 45

yr Asp Trp Tyr Pro Asn His His Thr Tyr Ala Glu Leu Met Gln Thr  
50 55 60

eu Arg Phe Leu Gly Leu Tyr Arg Asp Glu His Gln Asp Phe Met Asp  
5 70 75 80

lu Gln Lys Arg Leu Lys Lys Leu Arg Gly Lys Glu Lys Pro Lys Lys  
85 90 95

ly Glu Gly Lys Arg Ala Ala Lys Arg Lys  
100 105

?10> 163

?11> 180

?12> PRT

?13> Homo sapiens

!00> 163

st Gly Leu Thr Ile Ser Ser Leu Phe Ser Arg Leu Phe Gly Lys Lys  
5 10 15

.n Met Arg Ile Leu Met Val Gly Leu Asp Ala Ala Gly Lys Thr Thr  
20 25 30

.e Leu Tyr Lys Leu Lys Leu Gly Glu Ile Val Thr Thr Ile Pro Thr  
35 40 45

.e Gly Phe Asn Val Glu Thr Val Glu Tyr Lys Asn Ile Cys Phe Thr  
50 55 60

l Trp Asp Val Gly Gly Gln Asp Arg Ile Arg Pro Leu Trp Lys His  
70 75 80

r Phe Gln Asn Thr Gln Gly Leu Ile Phe Val Val Asp Ser Asn Asp  
85 90 95

g Glu Arg Ile Gln Glu Val Ala Asp Glu Leu Gln Lys Met Leu Leu

## eolf-seql-S000001.txt

100

105

110

il Asp Glu Leu Arg Asp Ala Val Leu Leu Leu Phe Ala Asn Lys Gln  
115 120 125

sp Leu Pro Asn Ala Met Ala Ile Ser Glu Met Thr Asp Lys Leu Gly  
130 135 140

eu Gln Ser Leu Arg Asn Arg Thr Trp Tyr Val Gln Ala Thr Cys Ala  
15 150 155 160

ir Gln Gly Thr Gly Leu Tyr Glu Gly Leu Asp Trp Leu Ser Asn Glu  
165 170 175

eu Ser Lys Arg  
180

:10> 164

:11> 1140

:12> PRT

:13> Homo sapiens

.00> 164

t Ser Tyr Asn Tyr Val Val Thr Ala Gln Lys Pro Thr Ala Val Asn  
5 10 15

y Cys Val Thr Gly His Phe Thr Ser Ala Glu Asp Leu Asn Leu Leu  
20 25 30

e Ala Lys Asn Thr Arg Leu Glu Ile Tyr Val Val Thr Ala Glu Gly  
35 40 45

u Arg Pro Val Lys Glu Val Gly Met Tyr Gly Lys Ile Ala Val Met  
50 55 60

u Leu Phe Arg Pro Lys Gly Glu Ser Lys Asp Leu Leu Phe Ile Leu  
70 75 80

r Ala Lys Tyr Asn Ala Cys Ile Leu Glu Tyr Lys Gln Ser Gly Glu  
85 90 95

r Ile Asp Ile Ile Thr Arg Ala His Gly Asn Val Gln Asp Arg Ile

## eolf-seql-S000001.txt

100 105 110

ly Arg Pro Ser Glu Thr Gly Ile Ile Gly Ile Ile Asp Pro Glu Cys  
115 120 125

rg Met Ile Gly Leu Arg Leu Tyr Asp Gly Leu Phe Lys Val Ile Pro  
130 135 140

eu Asp Arg Asp Asn Lys Glu Leu Lys Ala Phe Asn Ile Arg Leu Glu  
145 150 155 160

.u Leu His Val Ile Asp Val Lys Phe Leu Tyr Gly Cys Gln Ala Pro  
165 170 175

ur Ile Cys Phe Val Tyr Gln Asp Pro Gln Gly Arg His Val Lys Thr  
180 185 190

'r Glu Val Ser Leu Arg Glu Lys Glu Phe Asn Lys Gly Pro Trp Lys  
195 200 205

n Glu Asn Val Glu Ala Glu Ala Ser Met Val Ile Ala Val Pro Glu  
210 215 220

o Phe Gly Gly Ala Ile Ile Gly Gln Glu Ser Ile Thr Tyr His  
5 230 235 240

n Gly Asp Lys Tyr Leu Ala Ile Ala Pro Pro Ile Ile Lys Gln Ser  
245 250 255

r Ile Val Cys His Asn Arg Val Asp Pro Asn Gly Ser Arg Tyr Leu  
260 265 270

u Gly Asp Met Glu Gly Arg Leu Phe Met Leu Leu Leu Glu Lys Glu  
275 280 285

u Gln Met Asp Gly Thr Val Thr Leu Lys Asp Leu Arg Val Glu Leu  
290 295 300

u Gly Glu Thr Ser Ile Ala Glu Cys Leu Thr Tyr Leu Asp Asn Gly  
5 310 315 320

eolf-seql-S000001.txt  
il Val Phe Val Gly Ser Arg Leu Gly Asp Ser Gln Leu Val Lys Leu  
325 330 335  
  
in Val Asp Ser Asn Glu Gln Gly Ser Tyr Val Val Ala Met Glu Thr  
340 345 350  
  
ie Thr Asn Leu Gly Pro Ile Val Asp Met Cys Val Val Asp Leu Glu  
355 360 365  
  
g Gln Gly Gln Gly Gln Leu Val Thr Cys Ser Gly Ala Phe Lys Glu  
370 375 380  
  
y Ser Leu Arg Ile Ile Arg Asn Gly Ile Gly Ile His Glu His Ala  
375 390 395 400  
  
r Ile Asp Leu Pro Gly Ile Lys Gly Leu Trp Pro Leu Arg Ser Asp  
405 410 415  
  
o Asn Arg Glu Thr Tyr Asp Thr Leu Val Leu Ser Phe Val Gly Gln  
420 425 430  
  
r Arg Val Leu Met Leu Asn Gly Glu Glu Val Glu Glu Thr Glu Leu  
435 440 445  
  
t Gly Phe Val Asp Asp Gln Gln Thr Phe Phe Cys Gly Asn Val Ala  
450 455 460  
  
s Gln Gln Leu Ile Gln Ile Thr Ser Ala Ser Val Arg Leu Val Ser  
470 475 480  
  
n Glu Pro Lys Ala Leu Val Ser Glu Trp Lys Glu Pro Gln Ala Lys  
485 490 495  
  
n Ile Ser Val Ala Ser Cys Asn Ser Ser Gln Val Val Val Ala Val  
500 505 510  
  
y Arg Ala Leu Tyr Tyr Leu Gln Ile His Pro Gln Glu Leu Arg Gln  
515 520 525  
  
e Ser His Thr Glu Met Glu His Glu Val Ala Cys Leu Asp Ile Thr  
530 535 540

## eolf-seql-S000001.txt

ro Leu Gly Asp Ser Asn Gly Leu Ser Pro Leu Cys Ala Ile Gly Leu  
45 550 555 560

cp Thr Asp Ile Ser Ala Arg Ile Leu Lys Leu Pro Ser Phe Glu Leu  
565 570 575

eu His Lys Glu Met Leu Gly Gly Glu Ile Ile Pro Arg Ser Ile Leu  
580 585 590

et Thr Thr Phe Glu Ser Ser His Tyr Leu Leu Cys Ala Leu Gly Asp  
595 600 605

ly Ala Leu Phe Tyr Phe Gly Leu Asn Ile Glu Thr Gly Leu Leu Ser  
610 615 620

sp Arg Lys Lys Val Thr Leu Gly Thr Gln Pro Thr Val Leu Arg Thr  
625 630 635 640

re Arg Ser Leu Ser Thr Thr Asn Val Phe Ala Cys Ser Asp Arg Pro  
645 650 655

ir Val Ile Tyr Ser Ser Asn His Lys Leu Val Phe Ser Asn Val Asn  
660 665 670

eu Lys Glu Val Asn Tyr Met Cys Pro Leu Asn Ser Asp Gly Tyr Pro  
675 680 685

ip Ser Leu Ala Leu Ala Asn Asn Ser Thr Leu Thr Ile Gly Thr Ile  
690 695 700

ip Glu Ile Gln Lys Leu His Ile Arg Thr Val Pro Leu Tyr Glu Ser  
705 710 715 720

o Arg Lys Ile Cys Tyr Gln Glu Val Ser Gln Cys Phe Gly Val Leu  
725 730 735

r Ser Arg Ile Glu Val Gln Asp Thr Ser Gly Gly Thr Thr Ala Leu  
740 745 750

g Pro Ser Ala Ser Thr Gln Ala Leu Ser Ser Ser Val Ser Ser Ser  
755 760 765

## eolf-seql-S000001.txt

ys Leu Phe Ser Ser Ser Thr Ala Pro His Glu Thr Ser Phe Gly Glu  
770 775 780

lu Val Glu Val His Asn Leu Leu Ile Ile Asp Gln His Thr Phe Glu  
35 790 795 800

al Leu His Ala His Gln Phe Leu Gln Asn Glu Tyr Ala Leu Ser Leu  
805 810 815

al Ser Cys Lys Leu Gly Lys Asp Pro Asn Thr Tyr Phe Ile Val Gly  
820 825 830

ir Ala Met Val Tyr Pro Glu Glu Ala Glu Pro Lys Gln Gly Arg Ile  
835 840 845

al Val Phe Gln Tyr Ser Asp Gly Lys Leu Gln Thr Val Ala Glu Lys  
850 855 860

u Val Lys Gly Ala Val Tyr Ser Met Val Glu Phe Asn Gly Lys Leu  
85 870 875 880

eu Ala Ser Ile Asn Ser Thr Val Arg Leu Tyr Glu Trp Thr Thr Glu  
885 890 895

's Asp Val Arg Thr Glu Cys Asn His Tyr Asn Asn Ile Met Ala Leu  
900 905 910

r Leu Lys Thr Lys Gly Asp Phe Ile Leu Val Gly Asp Leu Met Arg  
915 920 925

r Val Leu Leu Ala Tyr Lys Pro Met Glu Gly Asn Phe Glu Glu  
930 935 940

e Ala Arg Asp Phe Asn Pro Asn Trp Met Ser Ala Val Glu Ile Leu  
5 950 955 960

p Asp Asp Asn Phe Leu Gly Ala Glu Asn Ala Phe Asn Leu Phe Val  
965 970 975

s Gln Lys Asp Ser Ala Ala Thr Thr Asp Glu Glu Arg Gln His Leu

## eolf-seql-S000001.txt

980 985 990

In Glu Val Gly Leu Phe His Leu Gly Glu Phe Val Asn Val Phe Cys  
995 1000 1005

is Gly Ser Leu Val Met Gln Asn Leu Gly Glu Thr Ser Thr Pro  
1010 1015 1020

ir Gln Gly Ser Val Leu Phe Gly Thr Val Asn Gly Met Ile Gly  
1025 1030 1035

eu Val Thr Ser Leu Ser Glu Ser Trp Tyr Asn Leu Leu Leu Asp  
1040 1045 1050

st Gln Asn Arg Leu Asn Lys Val Ile Lys Ser Val Gly Lys Ile  
1055 1060 1065

lu His Ser Phe Trp Arg Ser Phe His Thr Glu Arg Lys Thr Glu  
1070 1075 1080

:o Ala Thr Gly Phe Ile Asp Gly Asp Leu Ile Glu Ser Phe Leu  
1085 1090 1095

:p Ile Ser Arg Pro Lys Met Gln Glu Val Val Ala Asn Leu Gln  
1100 1105 1110

:r Asp Asp Gly Ser Gly Met Lys Arg Glu Ala Thr Ala Asp Asp  
1115 1120 1125

:u Ile Lys Val Val Glu Glu Leu Thr Arg Ile His  
1130 1135 1140

:10> 165  
:11> 153  
:12> PRT  
:13> Homo sapiens

00> 165

:t Gly Ala Pro Leu Leu Ser Pro Gly Trp Gly Ala Gly Ala Gly  
5 10 15

:g Arg Trp Trp Met Leu Leu Ala Pro Leu Leu Pro Ala Leu Leu

## eolf-seql-S000001.txt

20

25

30

al Arg Pro Ala Gly Ala Leu Val Glu Gly Leu Tyr Cys Gly Thr Arg  
35 40 45

sp Cys Tyr Glu Val Leu Gly Val Ser Arg Ser Ala Gly Lys Ala Glu  
50 55 60

le Ala Arg Ala Tyr Arg Gln Leu Ala Arg Arg Tyr His Pro Asp Arg  
; 70 75 80

ir Arg Pro Gln Pro Gly Asp Glu Gly Pro Gly Arg Thr Pro Gln Ser  
85 90 95

a Glu Glu Ala Phe Leu Leu Val Ala Thr Ala Tyr Glu Thr Leu Lys  
100 105 110

al Ser Gln Ala Ala Ala Glu Leu Gln Gln Tyr Cys Met Gln Asn Ala  
115 120 125

s Lys Asp Ala Leu Leu Val Gly Val Pro Ala Gly Ser Asn Pro Phe  
130 135 140

g Glu Pro Arg Ser Cys Ala Leu Leu  
5 150

10> 166

11> 557

12> PRT

13> Homo sapiens

00> 166

t Asp Gly Ile Val Pro Asp Ile Ala Val Gly Thr Lys Arg Gly Ser  
5 10 15

p Glu Leu Phe Ser Thr Cys Val Thr Asn Gly Pro Phe Ile Met Ser  
20 25 30

r Asn Ser Ala Ser Ala Ala Asn Gly Asn Asp Ser Lys Lys Phe Lys  
35 40 45

y Asp Ser Arg Ser Ala Gly Val Pro Ser Arg Val Ile His Ile Arg

## eolf-seql-S000001.txt

50 55 60

ys Leu Pro Ile Asp Val Thr Glu Gly Glu Val Ile Ser Leu Gly Leu  
5 70 75 80

ro Phe Gly Lys Val Thr Asn Leu Leu Met Leu Lys Gly Lys Asn Gln  
85 90 95

la Phe Ile Glu Met Asn Thr Glu Glu Ala Ala Asn Thr Met Val Asn  
100 105 110

yr Tyr Thr Ser Val Thr Pro Val Leu Arg Gly Gln Pro Ile Tyr Ile  
115 120 125

In Phe Ser Asn His Lys Glu Leu Lys Thr Asp Ser Ser Pro Asn Gln  
130 135 140

la Arg Ala Gln Ala Ala Leu Gln Ala Val Asn Ser Val Gln Ser Gly  
145 150 155 160

sn Leu Ala Leu Ala Ala Ser Ala Ala Val Asp Ala Gly Met Ala  
165 170 175

et Ala Gly Gln Ser Pro Val Leu Arg Ile Ile Val Glu Asn Leu Phe  
180 185 190

yr Pro Val Thr Leu Asp Val Leu His Gln Ile Phe Ser Lys Phe Gly  
195 200 205

ir Val Leu Lys Ile Ile Thr Phe Thr Lys Asn Asn Gln Phe Gln Ala  
210 215 220

eu Leu Gln Tyr Ala Asp Pro Val Ser Ala Gln His Ala Lys Leu Ser  
225 230 235 240

eu Asp Gly Gln Asn Ile Tyr Asn Ala Cys Cys Thr Leu Arg Ile Asp  
245 250 255

e Ser Lys Leu Thr Ser Leu Asn Val Lys Tyr Asn Asn Asp Lys Ser  
260 265 270

## eolf-seql-S000001.txt

:g Asp Tyr Thr Arg Pro Asp Leu Pro Ser Gly Asp Ser Gln Pro Ser  
275 280 285

:u Asp Gln Thr Met Ala Ala Ala Phe Gly Ala Pro Gly Ile Ile Ser  
290 295 300

:a Ser Pro Tyr Ala Gly Ala Gly Phe Pro Pro Thr Phe Ala Ile Pro  
315 310 315 320

:n Ala Ala Gly Leu Ser Val Pro Asn Val His Gly Ala Leu Ala Pro  
325 330 335

:u Ala Ile Pro Ser Ala Ala Ala Ala Ala Ala Gly Arg Ile  
340 345 350

:a Ile Pro Gly Leu Ala Gly Ala Gly Asn Ser Val Leu Leu Val Ser  
355 360 365

:n Leu Asn Pro Glu Arg Val Thr Pro Gln Ser Leu Phe Ile Leu Phe  
370 375 380

:y Val Tyr Gly Asp Val Gln Arg Val Lys Ile Leu Phe Asn Lys Lys  
390 395 400

:u Asn Ala Leu Val Gln Met Ala Asp Gly Asn Gln Ala Gln Leu Ala  
405 410 415

:t Ser His Leu Asn Gly His Lys Leu His Gly Lys Pro Ile Arg Ile  
420 425 430

:r Leu Ser Lys His Gln Asn Val Gln Leu Pro Arg Glu Gly Gln Glu  
435 440 445

:p Gln Gly Leu Thr Lys Asp Tyr Gly Asn Ser Pro Leu His Arg Phe  
450 455 460

:s Lys Pro Gly Ser Lys Asn Phe Gln Asn Ile Phe Pro Pro Ser Ala  
470 475 480

:r Leu His Leu Ser Asn Ile Pro Pro Ser Val Ser Glu Glu Asp Leu  
485 490 495

## eolf-seql-S000001.txt

/s Val Leu Phe Ser Ser Asn Gly Gly Val Val Lys Gly Phe Lys Phe  
500 505 510

\e Gln Lys Asp Arg Lys Met Ala Leu Ile Gln Met Gly Ser Val Glu  
515 520 525

.u Ala Val Gln Ala Leu Ile Asp Leu His Asn His Asp Leu Gly Glu  
530 535 540

:n His His Leu Arg Val Ser Phe Ser Lys Ser Thr Ile  
15 550 555

:10> 167

:11> 303

:12> PRT

:13> Homo sapiens

:00> 167

\t Ala Arg Gly Lys Ala Lys Glu Glu Gly Ser Trp Lys Lys Phe Ile  
5 10 15

\p Asn Ser Glu Lys Lys Glu Phe Leu Gly Arg Thr Gly Gly Ser Trp  
20 25 30

\e Lys Ile Leu Leu Phe Tyr Val Ile Phe Tyr Gly Cys Leu Ala Gly  
35 40 45

\e Phe Ile Gly Thr Ile Gln Val Met Leu Leu Thr Ile Ser Glu Phe  
50 55 60

\s Pro Thr Tyr Gln Asp Arg Val Ala Pro Pro Gly Leu Thr Gln Ile  
70 75 80

\o Gln Ile Gln Lys Thr Glu Ile Ser Phe Arg Pro Asn Asp Pro Lys  
85 90 95

\r Tyr Glu Ala Tyr Val Leu Asn Ile Val Arg Phe Leu Glu Lys Tyr  
100 105 110

\s Asp Ser Ala Gln Arg Asp Asp Met Ile Phe Glu Asp Cys Gly Asp  
115 120 125

## eolf-seql-S000001.txt

al Pro Ser Glu Pro Lys Glu Arg Gly Asp Phe Asn His Glu Arg Gly  
130 135 140

lu Arg Lys Val Cys Arg Phe Lys Leu Glu Trp Leu Gly Asn Cys Ser  
15 150 155 160

.y Leu Asn Asp Glu Thr Tyr Gly Tyr Lys Glu Gly Lys Pro Cys Ile  
165 170 175

.e Ile Lys Leu Asn Arg Val Leu Gly Phe Lys Pro Lys Pro Pro Lys  
180 185 190

:n Glu Ser Leu Glu Thr Tyr Pro Val Met Lys Tyr Asn Pro Asn Val  
195 200 205

:u Pro Val Gln Cys Thr Gly Lys Arg Asp Glu Asp Lys Asp Lys Val  
210 215 220

.y Asn Val Glu Tyr Phe Gly Leu Gly Asn Ser Pro Gly Phe Pro Leu  
15 230 235 240

.n Tyr Tyr Pro Tyr Tyr Gly Lys Leu Leu Gln Pro Lys Tyr Leu Gln  
245 250 255

:o Leu Leu Ala Val Gln Phe Thr Asn Leu Thr Met Asp Thr Glu Ile  
260 265 270

g Ile Glu Cys Lys Ala Tyr Gly Glu Asn Ile Gly Tyr Ser Glu Lys  
275 280 285

p Arg Phe Gln Gly Arg Phe Asp Val Lys Ile Glu Val Lys Ser  
290 295 300

10> 168  
11> 361  
12> PRT  
13> Homo sapiens

00> 168

t Phe Ser Ser Val Ala His Leu Ala Arg Ala Asn Pro Phe Asn Thr  
5 10 15

## eolf-seql-S000001.txt

to His Leu Gln Leu Val His Asp Gly Leu Gly Asp Leu Arg Ser Ser  
20 25 30

er Pro Gly Pro Thr Gly Gln Pro Arg Arg Pro Arg Asn Leu Ala Ala  
35 40 45

la Ala Val Glu Glu Tyr Ser Cys Glu Phe Gly Ser Ala Lys Tyr Tyr  
50 55 60

a Leu Cys Gly Phe Gly Gly Val Leu Ser Cys Gly Leu Thr His Thr  
; 70 75 80

a Val Val Pro Leu Asp Leu Val Lys Cys Arg Met Gln Val Asp Pro  
85 90 95

n Lys Tyr Lys Gly Ile Phe Asn Gly Phe Ser Val Thr Leu Lys Glu  
100 105 110

ip Gly Val Arg Gly Leu Ala Lys Gly Trp Ala Pro Thr Phe Leu Gly  
115 120 125

r Ser Met Gln Gly Leu Cys Lys Phe Gly Phe Tyr Glu Val Phe Lys  
130 135 140

l Leu Tyr Ser Asn Met Leu Gly Glu Glu Asn Thr Tyr Leu Trp Arg  
5 150 155 160

r Ser Leu Tyr Leu Ala Ala Ser Ala Ser Ala Glu Phe Phe Ala Asp  
165 170 175

e Ala Leu Ala Pro Met Glu Ala Ala Lys Val Arg Ile Gln Thr Gln  
180 185 190

o Gly Tyr Ala Asn Thr Leu Arg Asp Ala Ala Pro Lys Met Tyr Lys  
195 200 205

u Glu Gly Leu Lys Ala Phe Tyr Lys Gly Val Ala Pro Leu Trp Met  
210 215 220

g Gln Ile Pro Tyr Thr Met Met Lys Phe Ala Cys Phe Glu Arg Thr  
5 230 235 240

## eolf-seql-S000001.txt

al Glu Ala Leu Tyr Lys Phe Val Val Pro Lys Pro Arg Ser Glu Cys  
245 250 255

er Lys Pro Glu Gln Leu Val Val Thr Phe Val Ala Gly Tyr Ile Ala  
260 265 270

.y Val Phe Cys Ala Ile Val Ser His Pro Ala Asp Ser Val Val Ser  
275 280 285

il Leu Asn Lys Glu Lys Gly Ser Ser Ala Ser Leu Val Leu Lys Arg  
290 295 300

eu Gly Phe Lys Gly Val Trp Lys Gly Leu Phe Ala Arg Ile Ile Met  
15 310 315 320

e Gly Thr Leu Thr Ala Leu Gln Trp Phe Ile Tyr Asp Ser Val Lys  
325 330 335

l Tyr Phe Arg Leu Pro Arg Pro Pro Pro Glu Met Pro Glu Ser  
340 345 350

u Lys Lys Lys Leu Gly Leu Thr Gln  
355 360

10> 169  
11> 369  
12> PRT  
13> Homo sapiens

00> 169

t Asp Pro Arg Lys Val Asn Glu Leu Arg Ala Phe Val Lys Met Cys  
5 10 15

s Gln Asp Pro Ser Val Leu His Thr Glu Glu Met Arg Phe Leu Arg  
20 25 30

u Trp Val Glu Ser Met Gly Gly Lys Val Pro Pro Ala Thr Gln Lys  
35 40 45

a Lys Ser Glu Glu Asn Thr Lys Glu Glu Lys Pro Asp Ser Lys Lys  
50 55 60

## eolf-seql-S000001.txt

il Glu Glu Asp Leu Lys Ala Asp Glu Pro Ser Ser Glu Glu Ser Asp  
; 70 75 80

:u Glu Ile Asp Lys Glu Gly Val Ile Glu Pro Asp Thr Asp Ala Pro  
85 90 95

.n Glu Met Gly Asp Glu Asn Ala Glu Ile Thr Glu Glu Met Met Asp  
100 105 110

.n Ala Asn Asp Lys Lys Val Ala Ala Ile Glu Ala Leu Asn Asp Gly  
115 120 125

.u Leu Gln Lys Ala Ile Asp Leu Phe Thr Asp Ala Ile Lys Leu Asn  
130 135 140

.o Arg Leu Ala Ile Leu Tyr Ala Lys Arg Ala Ser Val Phe Val Lys  
5 150 155 160

.u Gln Lys Pro Asn Ala Ala Ile Arg Asp Cys Asp Arg Ala Ile Glu  
165 170 175

e Asn Pro Asp Ser Ala Gln Pro Tyr Lys Trp Arg Gly Lys Ala His  
180 185 190

g Leu Leu Gly His Trp Glu Glu Ala Ala His Asp Leu Ala Leu Ala  
195 200 205

s Lys Leu Asp Tyr Asp Glu Asp Ala Ser Ala Met Leu Lys Glu Val  
210 215 220

n Pro Arg Ala Gln Lys Ile Ala Glu His Arg Arg Lys Tyr Glu Arg  
5 230 235 240

s Arg Glu Glu Arg Glu Ile Lys Glu Arg Ile Glu Arg Val Lys Lys  
245 250 255

a Arg Glu Glu His Glu Arg Ala Gln Arg Glu Glu Ala Arg Arg  
260 265 270

n Ser Gly Ala Gln Tyr Gly Ser Phe Pro Gly Gly Phe Pro Gly Gly

eolf-seql-S000001.txt  
275                   280                   285  
  
et Pro Gly Asn Phe Pro Gly Gly Met Pro Gly Met Gly Gly Gly Met  
290                   295                   300  
  
so Gly Met Ala Gly Met Pro Gly Leu Asn Glu Ile Leu Ser Asp Pro  
305                   310                   315                   320  
  
lu Val Leu Ala Ala Met Gln Asp Pro Glu Val Met Val Ala Phe Gln  
325                   330                   335  
  
sp Val Ala Gln Asn Pro Ala Asn Met Ser Lys Tyr Gln Ser Asn Pro  
340                   345                   350  
  
rs Val Met Asn Leu Ile Ser Lys Leu Ser Ala Lys Phe Gly Gly Gln  
355                   360                   365  
  
.a  
  
!10> 170  
!11> 440  
!12> PRT  
!13> Homo sapiens  
  
!20>  
!21> misc\_feature  
!22> (21)..(21)  
!23> Xaa can be any naturally occurring amino acid  
  
.00> 170  
  
.t Glu Tyr Gln Ile Leu Lys Met Ser Leu Cys Leu Phe Ile Leu Leu  
5                   10                   15  
  
.e Leu Thr Pro Xaa Ile Leu Cys Ile Cys Pro Leu Gln Cys Ile Cys  
20                   25                   30  
  
.r Glu Arg His Arg His Val Asp Cys Ser Gly Arg Asn Leu Ser Thr  
35                   40                   45  
  
.u Pro Ser Gly Leu Gln Glu Asn Ile Ile His Leu Asn Leu Ser Tyr  
50                   55                   60

## eolf-seql-S000001.txt

sn His Phe Thr Asp Leu His Asn Gln Leu Thr Gln Tyr Thr Asn Leu  
5 70 75 80

sg Thr Leu Asp Ile Ser Asn Asn Arg Leu Glu Ser Leu Pro Ala His  
85 90 95

eu Pro Arg Ser Leu Trp Asn Met Ser Ala Ala Asn Asn Ile Lys  
100 105 110

eu Leu Asp Lys Ser Asp Thr Ala Tyr Gln Trp Asn Leu Lys Tyr Leu  
115 120 125

ip Val Ser Lys Asn Met Leu Glu Lys Val Val Leu Ile Lys Asn Thr  
130 135 140

eu Arg Ser Leu Glu Val Leu Asn Leu Ser Ser Asn Lys Leu Trp Thr  
145 150 155 160

il Pro Thr Asn Met Pro Ser Lys Leu His Ile Val Asp Leu Ser Asn  
165 170 175

an Ser Leu Thr Gln Ile Leu Pro Gly Thr Leu Ile Asn Leu Thr Asn  
180 185 190

u Thr His Leu Tyr Leu His Asn Asn Lys Phe Thr Phe Ile Pro Asp  
195 200 205

n Ser Phe Asp Gln Leu Phe Gln Leu Gln Glu Ile Thr Leu Tyr Asn  
210 215 220

n Arg Trp Ser Cys Asp His Lys Gln Asn Ile Thr Tyr Leu Leu Lys  
5 230 235 240

p Met Met Glu Thr Lys Ala His Val Ile Gly Thr Pro Cys Ser Thr  
245 250 255

n Ile Ser Ser Leu Lys Glu His Asn Met Tyr Pro Thr Pro Ser Gly  
260 265 270

e Thr Ser Ser Leu Phe Thr Val Ser Gly Met Gln Thr Val Asp Thr  
275 280 285

## eolf-seql-S000001.txt

le Asn Ser Leu Ser Val Val Thr Gln Pro Lys Val Thr Lys Ile Pro  
290 295 300

/s. Gln Tyr Arg Thr Lys Glu Thr Thr Phe Gly Ala Thr Leu Ser Lys  
310 315 320

:p Thr Thr Phe Thr Ser Thr Asp Lys Ala Phe Val Pro Tyr Pro Glu  
325 330 335

:p Thr Ser Thr Glu Thr Ile Asn Ser His Glu Ala Ala Ala Ala Thr  
340 345 350

:eu Thr Ile His Leu Gln Asp Gly Met Val Thr Asn Thr Ser Leu Thr  
355 360 365

:er Ser Thr Lys Ser Ser Pro Thr Pro Met Thr Leu Ser Ile Thr Ser  
370 375 380

:y Met Pro Asn Asn Phe Ser Glu Met Pro Gln Gln Ser Thr Thr Leu  
390 395 400

:n Leu Trp Arg Glu Glu Thr Thr Asn Val Lys Thr Pro Leu Pro  
405 410 415

:r Val Ala Asn Ala Trp Lys Val Asn Ala Ser Phe Leu Leu Leu  
420 425 430

:n Val Val Val Met Leu Ala Val  
435 440

10> 171

11> 241

12> PRT

13> Homo sapiens

00> 171

t Leu Ser Ser Thr Ala Met Tyr Ser Ala Pro Gly Arg Asp Leu Gly  
5 10 15

t Glu Pro His Arg Ala Ala Gly Pro Leu Gln Leu Arg Phe Ser Pro  
20 25 30

## eolf-seql-S000001.txt

/r Val Phe Asn Gly Gly Thr Ile Leu Ala Ile Ala Gly Glu Asp Phe  
35 40 45

Ia Ile Val Ala Ser Asp Thr Arg Leu Ser Glu Gly Phe Ser Ile His  
50 55 60

ir Arg Asp Ser Pro Lys Cys Tyr Lys Leu Thr Asp Lys Thr Val Ile  
; 70 75 80

.y Cys Ser Gly Phe His Gly Asp Cys Leu Thr Leu Thr Lys Ile Ile  
85 90 95

.u Ala Arg Leu Lys Met Tyr Lys His Ser Asn Asn Lys Ala Met Thr  
100 105 110

ir Gly Ala Ile Ala Ala Met Leu Ser Thr Ile Leu Tyr Ser Arg Arg  
115 120 125

le Phe Pro Tyr Tyr Val Tyr Asn Ile Ile Gly Gly Leu Asp Glu Glu  
130 135 140

y Lys Gly Ala Val Tyr Ser Phe Asp Pro Val Gly Ser Tyr Gln Arg  
5 150 155 160

p Ser Phe Lys Ala Gly Gly Ser Ala Ser Ala Met Leu Gln Pro Leu  
165 170 175

u Asp Asn Gln Val Gly Phe Lys Asn Met Gln Asn Val Glu His Val  
180 185 190

o Leu Ser Leu Asp Arg Ala Met Arg Leu Val Lys Asp Val Phe Ile  
195 200 205

r Ala Ala Glu Arg Asp Val Tyr Thr Gly Asp Ala Leu Arg Ile Cys  
210 215 220

e Val Thr Lys Glu Gly Ile Arg Glu Glu Thr Val Ser Leu Arg Lys  
5 230 235 240

## eolf-seql-S000001.txt

:10> 172

:11> 83

:12> PRT

:13> Homo sapiens

.00> 172

t Gln Asn Asp Ala Gly Glu Phe Val Asp Leu Tyr Val Pro Arg Lys  
5 10 15

s Ser Ala Ser Asn Arg Ile Ile Gly Ala Lys Asp His Ala Ser Ile  
20 25 30

n Met Asn Val Ala Glu Val Asp Lys Val Thr Gly Arg Phe Asn Gly  
35 40 45

n Phe Lys Thr Tyr Ala Ile Cys Gly Ala Ile Arg Arg Met Gly Glu  
50 55 60

r Asp Asp Ser Ile Leu Arg Leu Ala Lys Ala Asp Gly Ile Val Ser  
70 75 80

s Asn Phe

10> 173

11> 660

12> PRT

13> Homo sapiens

00> 173

t Glu Ala Leu Met Ala Arg Gly Ala Leu Thr Gly Pro Leu Arg Ala  
5 10 15

u Cys Leu Leu Gly Cys Leu Leu Ser His Ala Ala Ala Ala Pro Ser  
20 25 30

o Ile Ile Lys Phe Pro Gly Asp Val Ala Pro Lys Thr Asp Lys Glu  
35 40 45

i Ala Val Gln Tyr Leu Asn Thr Phe Tyr Gly Cys Pro Lys Glu Ser  
50 55 60

## eolf-seql-S000001.txt

ys Asn Leu Phe Val Leu Lys Asp Thr Leu Lys Lys Met Gln Lys Phe  
5 70 75 80

ie Gly Leu Pro Gln Thr Gly Asp Leu Asp Gln Asn Thr Ile Glu Thr  
85 90 95

et Arg Lys Pro Arg Cys Gly Asn Pro Asp Val Ala Asn Tyr Asn Phe  
100 105 110

ie Pro Arg Lys Pro Lys Trp Asp Lys Asn Gln Ile Thr Tyr Arg Ile  
115 120 125

le Gly Tyr Thr Pro Asp Leu Asp Pro Glu Thr Val Asp Asp Ala Phe  
130 135 140

aa Arg Ala Phe Gln Val Trp Ser Asp Val Thr Pro Leu Arg Phe Ser  
15 150 155 160

ig Ile His Asp Gly Glu Ala Asp Ile Met Ile Asn Phe Gly Arg Trp  
165 170 175

uu His Gly Asp Gly Tyr Pro Phe Asp Gly Lys Asp Gly Leu Leu Ala  
180 185 190

ss Ala Phe Ala Pro Gly Thr Gly Val Gly Asp Ser His Phe Asp  
195 200 205

pp Asp Glu Leu Trp Thr Leu Gly Glu Gly Gln Val Val Arg Val Lys  
210 215 220

rr Gly Asn Ala Asp Gly Glu Tyr Cys Lys Phe Pro Phe Leu Phe Asn  
5 230 235 240

yy Lys Glu Tyr Asn Ser Cys Thr Asp Thr Gly Arg Ser Asp Gly Phe  
245 250 255

uu Trp Cys Ser Thr Thr Tyr Asn Phe Glu Lys Asp Gly Lys Tyr Gly  
260 265 270

ee Cys Pro His Glu Ala Leu Phe Thr Met Gly Gly Asn Ala Glu Gly

## eolf-seql-S000001.txt

275

280

285

I n Pro Cys Lys Phe Pro Phe Arg Phe Gln Gly Thr Ser Tyr Asp Ser  
290 295 300

/s Thr Thr Glu Gly Arg Thr Asp Gly Tyr Arg Trp Cys Gly Thr Thr  
315 310 315 320

.u Asp Tyr Asp Arg Asp Lys Lys Tyr Gly Phe Cys Pro Glu Thr Ala  
325 330 335

.t Ser Thr Val Gly Gly Asn Ser Glu Gly Ala Pro Cys Val Phe Pro  
340 345 350

.ie Thr Phe Leu Gly Asn Lys Tyr Glu Ser Cys Thr Ser Ala Gly Arg  
355 360 365

.r Asp Gly Lys Met Trp Cys Ala Thr Thr Ala Asn Tyr Asp Asp Asp  
370 375 380

.g Lys Trp Gly Phe Cys Pro Asp Gln Gly Tyr Ser Leu Phe Leu Val  
395 390 395 400

a Ala His Glu Phe Gly His Ala Met Gly Leu Glu His Ser Gln Asp  
405 410 415

o Gly Ala Leu Met Ala Pro Ile Tyr Thr Tyr Thr Lys Asn Phe Arg  
420 425 430

u Ser Gln Asp Asp Ile Lys Gly Ile Gln Glu Leu Tyr Gly Ala Ser  
435 440 445

o Asp Ile Asp Leu Gly Thr Gly Pro Thr Pro Thr Leu Gly Pro Val  
450 455 460

r Pro Glu Ile Cys Lys Gln Asp Ile Val Phe Asp Gly Ile Ala Gln  
470 475 480

e Arg Gly Glu Ile Phe Phe Lys Asp Arg Phe Ile Trp Arg Thr  
485 490 495

eolf-seql-S000001.txt  
11 Thr Pro Arg Asp Lys Pro Met Gly Pro Leu Leu Val Ala Thr Phe  
500 505 510  
  
12 Pro Glu Leu Pro Glu Lys Ile Asp Ala Val Tyr Glu Ala Pro Gln  
515 520 525  
  
13 Glu Lys Ala Val Phe Phe Ala Gly Asn Glu Tyr Trp Ile Tyr Ser  
530 535 540  
  
14 Ser Thr Leu Glu Arg Gly Tyr Pro Lys Pro Leu Thr Ser Leu Gly  
550 555 560  
  
15 Pro Pro Asp Val Gln Arg Val Asp Ala Ala Phe Asn Trp Ser Lys  
565 570 575  
  
16 Lys Lys Thr Tyr Ile Phe Ala Gly Asp Lys Phe Trp Arg Tyr Asn  
580 585 590  
  
17 Val Lys Lys Lys Met Asp Pro Gly Phe Pro Lys Leu Ile Ala Asp  
595 600 605  
  
18 Trp Asn Ala Ile Pro Asp Asn Leu Asp Ala Val Val Asp Leu Gln  
610 615 620  
  
19 Gly Gly His Ser Tyr Phe Phe Lys Gly Ala Tyr Tyr Leu Lys Leu  
630 635 640  
  
20 Asn Gln Ser Leu Lys Ser Val Lys Phe Gly Ser Ile Lys Ser Asp  
645 650 655  
  
21 Leu Gly Cys  
660  
  
10> 174  
11> 245  
12> PRT  
13> Homo sapiens  
  
00> 174  
  
t Asp Lys Asn Glu Leu Val Gln Lys Ala Lys Leu Ala Glu Gln Ala  
5 10 15

eolf-seql-S000001.txt

.u Arg Tyr Asp Asp Met Ala Ala Cys Met Lys Ser Val Thr Glu Gln  
20 25 30

.y Ala Glu Leu Ser Asn Glu Glu Arg Asn Leu Leu Ser Val Ala Tyr  
35 40 45

.s Asn Val Val Gly Ala Arg Arg Ser Ser Trp Arg Val Val Ser Ser  
50 55 60

.e Glu Gln Lys Thr Glu Gly Ala Glu Lys Lys Gln Gln Met Ala Arg  
70 75 80

.u Tyr Arg Glu Lys Ile Glu Thr Glu Leu Arg Asp Ile Cys Asn Asp  
85 90 95

.l Leu Ser Leu Leu Glu Lys Phe Leu Ile Pro Asn Ala Ser Gln Ala  
100 105 110

.u Ser Lys Val Phe Tyr Leu Lys Met Lys Gly Asp Tyr Tyr Arg Tyr  
115 120 125

.u Ala Glu Val Ala Ala Gly Asp Asp Lys Lys Gly Ile Val Asp Gln  
130 135 140

r Gln Gln Ala Tyr Gln Glu Ala Phe Glu Ile Ser Lys Lys Glu Met  
5 150 155 160

n Pro Thr His Pro Ile Arg Leu Gly Leu Ala Leu Asn Phe Ser Val  
165 170 175

e Tyr Tyr Glu Ile Leu Asn Ser Pro Glu Lys Ala Cys Ser Leu Ala  
180 185 190

s Thr Ala Phe Asp Glu Ala Ile Ala Glu Leu Asp Thr Leu Ser Glu  
195 200 205

.u Ser Tyr Lys Asp Ser Thr Leu Ile Met Gln Leu Leu Arg Asp Asn  
210 215 220

.u Thr Leu Trp Thr Ser Asp Thr Gln Gly Asp Glu Ala Glu Ala Gly  
5 230 235 240

## eolf-seql-S000001.txt

.u Gly Gly Glu Asn  
245

:10> 175  
:11> 173  
:12> PRT  
:13> Homo sapiens

:100> 175

:t Ser Thr Met Gly Asn Glu Ala Ser Tyr Pro Ala Glu Met Cys Ser  
5 10 15

:s Phe Asp Asn Asp Glu Ile Lys Arg Leu Gly Arg Arg Phe Lys Lys  
20 25 30

:u Asp Leu Asp Lys Ser Gly Ser Leu Ser Val Glu Glu Phe Met Ser  
35 40 45

:u Pro Glu Leu Arg His Asn Pro Leu Val Arg Arg Val Ile Asp Val  
50 55 60

:e Asp Thr Asp Gly Asp Gly Glu Val Asp Phe Lys Glu Phe Ile Leu  
70 75 80

:y Thr Ser Gln Phe Ser Val Lys Gly Asp Glu Glu Gln Lys Leu Arg  
85 90 95

:e Ala Phe Ser Ile Tyr Asp Met Asp Lys Asp Gly Tyr Ile Ser Asn  
100 105 110

:y Glu Leu Phe Gln Val Leu Lys Met Met Val Gly Asn Asn Leu Thr  
115 120 125

:p Trp Gln Leu Gln Gln Leu Val Asp Lys Thr Ile Ile Ile Leu Asp  
130 135 140

:s Asp Gly Asp Gly Lys Ile Ser Phe Glu Glu Phe Ser Ala Val Val  
5 150 155 160

:g Asp Leu Glu Ile His Lys Lys Leu Val Leu Ile Val  
165 170

## eolf-seql-S000001.txt

?10> 176  
?11> 907  
?12> PRT  
?13> Homo sapiens

!00> 176

> Thr Ala Val His Ala Gly Asn Ile Asn Phe Lys Trp Asp Pro Lys  
5 10 15

> Leu Glu Ile Arg Thr Leu Ala Val Glu Arg Leu Leu Glu Pro Leu  
20 25 30

> al Thr Gln Val Thr Thr Leu Val Asn Thr Asn Ser Lys Gly Pro Ser  
35 40 45

> in Lys Lys Arg Gly Arg Ser Lys Lys Ala His Val Leu Ala Ala Ser  
50 55 60

> l Glu Gln Ala Thr Glu Asn Phe Leu Glu Lys Gly Asp Lys Ile Ala  
70 75 80

> s Glu Ser Gln Phe Leu Lys Glu Glu Leu Val Val Ala Val Glu Asp  
85 90 95

> l Arg Lys Gln Gly Asp Leu Met Lys Ala Ala Ala Gly Glu Phe Ala  
100 105 110

> p Asp Pro Cys Ser Ser Val Lys Arg Gly Asn Met Val Arg Ala Ala  
115 120 125

> g Ala Leu Leu Ser Ala Val Thr Arg Leu Leu Ile Leu Ala Asp Met  
130 135 140

> a Asp Val Tyr Lys Leu Leu Val Gln Leu Lys Val Val Glu Asp Gly  
5 150 155 160

> e Leu Lys Leu Arg Asn Ala Gly Asn Glu Gln Asp Leu Gly Asn Gln  
165 170 175

> r Lys Ala Leu Lys Pro Glu Val Asp Lys Leu Asn Ile Met Ala Ala  
180 185 190

## eolf-seql-S000001.txt

ys Arg Gln Gln Glu Leu Lys Asp Val Gly His Arg Asp Gln Met Ala  
195 200 205

Ia Ala Arg Gly Ile Leu Gln Ser Asn Val Pro Ile Leu Tyr Thr Ala  
210 215 220

er Gln Ala Cys Leu Gln His Pro Asp Val Ala Ala Tyr Lys Ala Asn  
215 230 235 240

rg Asp Leu Ile Tyr Lys Gln Leu Gln Gln Ala Val Thr Gly Ile Ser  
245 250 255

sn Ala Ala Gln Ala Thr Ala Ser Asp Asp Ala Ser Gln His Gln Gly  
260 265 270

.y Gly Gly Gly Glu Leu Ala Tyr Ala Leu Asn Asn Phe Asp Lys Gln  
275 280 285

.e Ile Val Asp Pro Leu Ser Phe Ser Glu Glu Arg Phe Arg Pro Ser  
290 295 300

eu Glu Glu Arg Leu Glu Ser Ile Ile Ser Gly Ala Ala Leu Met Ala  
15 310 315 320

sp Ser Ser Cys Thr Arg Asp Asp Arg Arg Glu Arg Ile Val Ala Glu  
325 330 335

's Asn Ala Val Arg Gln Ala Cys Arg Thr Cys Val Ser Glu Tyr Met  
340 345 350

.y Asn Ala Gly Arg Lys Glu Arg Ser Asp Ala Leu Asn Ser Ala Ile  
355 360 365

p Lys Met Thr Lys Lys Thr Arg Asp Leu Arg Arg Gln Leu Arg Lys  
370 375 380

a Val Met Asp His Val Ser Asp Ser Phe Leu Glu Thr Asn Val Pro  
5 390 395 400

u Leu Val Leu Ile Glu Ala Ala Lys Asn Gly Asn Glu Lys Glu Val  
405 410 415

## eolf-seql-s000001.txt

ys Glu Tyr Ala Gln Val Phe Arg Glu His Ala Asn Lys Leu Ile Glu  
420 425 430

al Ala Asn Leu Ala Cys Ser Ile Ser Asn Asn Glu Glu Gly Val Lys  
435 440 445

eu Val Arg Met Ser Ala Ser Gln Leu Glu Ala Gly Cys Pro Gln Val  
450 455 460

le Asn Ala Ala Thr Trp Ala Leu Ala Pro Lys Pro Gln Ser Lys Leu  
455 470 475 480

.a Gln Glu Asn Met Asp Leu Phe Lys Glu Gln Trp Glu Lys Gln Val  
485 490 495

:g Val Leu Thr Asp Ala Val Asp Asp Ile Thr Ser Ile Asp Asp Phe  
500 505 510

eu Ala Val Ser Glu Asn His Ile Leu Glu Asp Val Asn Lys Cys Val  
515 520 525

.e Ala Leu Gln Glu Lys Asp Val Asp Gly Leu Asp Arg Thr Ala Gly  
530 535 540

.a Ile Arg Gly Arg Ala Ala Arg Val Ile His Val Val Thr Ser Glu  
550 555 560

t Asp Asn Tyr Glu Pro Gly Val Tyr Thr Glu Lys Val Leu Glu Ala  
565 570 575

r Lys Leu Leu Ser Asn Thr Val Met Pro Arg Phe Thr Glu Gln Val  
580 585 590

u Ala Ala Val Glu Ala Leu Ser Ser Asp Pro Ala Gln Pro Met Asp  
595 600 605

u Asn Glu Phe Ile Asp Ala Ser Arg Leu Val Tyr Asp Gly Ile Arg  
610 615 620

p Ile Arg Lys Ala Val Leu Met Ile Arg Thr Pro Glu Glu Leu Asp

eolf-seql-S000001.txt

5	630	635	640
<p>p Ser Asp Phe Glu Thr Glu Asp Phe Asp Val Arg Ser Glu Thr Ser 645                                 650                                 655</p>			
<p>l Gln Thr Glu Asp Asp Gln Leu Ile Ala Gly Gln Ser Ala Arg Ala 660                                 665                                 670</p>			
<p>e Met Ala Gln Leu Pro Gln Glu Gln Lys Ala Lys Ile Arg Glu Gln 675                                 680                                 685</p>			
<p>l Ala Ser Phe Gln Glu Glu Lys Ser Lys Leu Asp Ala Glu Val Ser 690                                 695                                 700</p>			
<p>s Trp Asp Asp Ser Gly Asn Asp Ile Ile Val Leu Ala Lys Gln Met 5                                     710                                 715                             720</p>			
<p>s Met Ile Met Met Glu Met Thr Asp Phe Thr Arg Gly Lys Gly Pro 725                                 730                                 735</p>			
<p>u Lys Asn Thr Ser Asp Val Ile Ser Ala Ala Lys Lys Ile Ala Glu 740                                 745                                 750</p>			
<p>a Gly Ser Arg Met Asp Lys Leu Gly Arg Thr Ile Arg Asp His Cys 755                                 760                                 765</p>			
<p>c Asp Ser Ala Cys Lys Gln Asp Leu Leu Ala Tyr Leu Gln Arg Ile 770                                 775                                 780</p>			
<p>a Leu Tyr Cys His Gln Leu Asn Ile Cys Ser Lys Val Lys Ala Glu 5                                     790                                 795                             800</p>			
<p>l Gln Asn Leu Gly Gly Glu Leu Val Val Ser Gly Val Asp Ser Ala 805                                 810                                 815</p>			
<p>: Ser Leu Ile Gln Ala Ala Lys Asn Leu Met Asn Ala Val Val Gln 820                                 825                                 830</p>			
<p>: Val Lys Ala Ser Tyr Val Ala Ser Thr Lys Tyr Gln Lys Ser Gln 835                                 840                                 845</p>			

eolf-seql-S000001.txt  
ly Met Ala Ser Leu Asn Leu Pro Ala Val Ser Met Lys Met Lys Ala  
850 855 860  
  
to Glu Lys Lys Pro Leu Val Lys Arg Glu Lys Gln Asp Glu Thr Gln  
65 870 875 880  
  
ir Lys Ile Lys Arg Ala Ser Gln Lys Lys His Val Asn Pro Val Gln  
885 890 895  
  
.a Leu Ser Glu Phe Lys Ala Met Asp Ser Ile  
900 905  
  
!10> 177  
!11> 176  
!12> PRT  
!13> Homo sapiens  
  
!00> 177  
  
et Thr Met Cys Ser Gly Ala Arg Leu Ala Leu Leu Val Tyr Gly Ile  
5 10 15  
  
.e Met His Ser Ser Val Tyr Ser Ser Pro Ala Ala Ala Gly Leu Arg  
20 25 30  
  
.e Pro Gly Ile Arg Pro Glu Glu Glu Ala Tyr Gly Glu Asp Gly Asn  
35 40 45  
  
.o Leu Pro Asp Phe Gly Gly Ser Glu Pro Pro Gly Ala Gly Ser Pro  
50 55 60  
  
a Ser Ala Pro Arg Ala Ala Ala Trp Tyr Arg Pro Ala Gly Arg  
70 75 80  
  
g Asp Val Ala His Gly Ile Leu Asn Glu Ala Tyr Arg Lys Val Leu  
85 90 95  
  
p Gln Leu Ser Ala Gly Lys His Leu Gln Ser Leu Val Ala Arg Gly  
100 105 110  
  
l Gly Gly Ser Leu Gly Gly Ala Gly Asp Asp Ala Glu Pro Leu  
115 120 125

eolf-seql-S000001.txt  
er Lys Arg His Ser Asp Gly Ile Phe Thr Asp Ser Tyr Ser Arg Tyr  
130 135 140

g Lys Gln Met Ala Val Lys Lys Tyr Leu Ala Ala Val Leu Gly Lys  
15 150 155 160

g Tyr Lys Gln Arg Val Lys Asn Lys Gly Arg Arg Ile Ala Tyr Leu  
165 170 175

?10> 178  
?11> 298  
?12> PRT  
?13> Homo sapiens

100> 178

st Ser Leu Tyr Pro Ser Leu Glu Asp Leu Lys Val Asp Lys Val Ile  
5 10 15

n Ala Gln Thr Ala Phe Ser Ala Asn Pro Ala Asn Pro Ala Ile Leu  
20 25 30

r Glu Ala Ser Ala Pro Ile Pro His Asp Gly Asn Leu Tyr Pro Arg  
35 40 45

u Tyr Pro Glu Leu Ser Gln Tyr Met Gly Leu Ser Leu Asn Glu Glu  
50 55 60

u Ile Arg Ala Ser Val Ala Val Val Ser Gly Ala Pro Leu Gln Gly  
70 75 80

n Leu Val Ala Arg Pro Ser Ser Ile Asn Tyr Met Val Ala Pro Val  
85 90 95

r Gly Asn Asp Val Gly Ile Arg Arg Ala Glu Ile Lys Gln Gly Ile  
100 105 110

g Glu Val Ile Leu Cys Lys Asp Gln Asp Gly Lys Ile Gly Leu Arg  
115 120 125

u Lys Ser Ile Asp Asn Gly Ile Phe Val Gln Leu Val Gln Ala Asn  
130 135 140

eolf-seql-S000001.txt  
er Pro Ala Ser Leu Val Gly Leu Arg Phe Gly Asp Gln Val Leu Gln  
15 150 155 160  
  
.e Asn Gly Glu Asn Cys Ala Gly Trp Ser Ser Asp Lys Ala His Lys  
165 170 175  
  
al Leu Lys Gln Ala Phe Gly Glu Lys Ile Thr Met Thr Ile Arg Asp  
180 185 190  
  
ng Pro Phe Glu Arg Thr Ile Thr Met His Lys Asp Ser Thr Gly His  
195 200 205  
  
al Gly Phe Ile Phe Lys Asn Gly Lys Ile Thr Ser Ile Val Lys Asp  
210 215 220  
  
er Ser Ala Ala Arg Asn Gly Leu Leu Thr Glu His Asn Ile Cys Glu  
25 230 235 240  
  
.e Asn Gly Gln Asn Val Ile Gly Leu Lys Asp Ser Gln Ile Ala Asp  
245 250 255  
  
e Leu Ser Thr Ser Gly Thr Val Val Thr Ile Thr Ile Met Pro Ala  
260 265 270  
  
e Ile Phe Glu His Ile Ile Lys Arg Met Ala Pro Ser Ile Met Lys  
275 280 285  
  
r Leu Met Asp His Thr Ile Pro Glu Val  
290 295  
  
10> 179  
11> 1621  
12> PRT  
13> Homo sapiens  
  
00> 179  
  
t Ala Lys Ser Gly Gly Cys Gly Ala Gly Ala Gly Val Gly Gly Gly  
5 10 15  
  
n Gly Ala Leu Thr Trp Val Asn Asn Ala Ala Lys Lys Glu Glu Ser  
20 25 30

eolf-seql-S000001.txt  
.u Thr Ala Asn Lys Asn Asp Ser Ser Lys Lys Leu Ser Val Glu Arg  
35 40 45  
  
.l Tyr Gln Lys Lys Thr Gln Leu Glu His Ile Leu Leu Arg Pro Asp  
50 55 60  
  
.r Tyr Ile Gly Ser Val Glu Pro Leu Thr Gln Phe Met Trp Val Tyr  
70 75 80  
  
.p Glu Asp Val Gly Met Asn Cys Arg Glu Val Thr Phe Val Pro Gly  
85 90 95  
  
.u Tyr Lys Ile Phe Asp Glu Ile Leu Val Asn Ala Ala Asp Asn Lys  
100 105 110  
  
.n Arg Asp Lys Asn Met Thr Cys Ile Lys Val Ser Ile Asp Pro Glu  
115 120 125  
  
.r Asn Ile Ile Ser Ile Trp Asn Asn Gly Lys Gly Ile Pro Val Val  
130 135 140  
  
.u His Lys Val Glu Lys Val Tyr Val Pro Ala Leu Ile Phe Gly Gln  
5 150 155 160  
  
.u Leu Thr Ser Ser Asn Tyr Asp Asp Asp Glu Lys Lys Val Thr Gly  
165 170 175  
  
.y Arg Asn Gly Tyr Gly Ala Lys Leu Cys Asn Ile Phe Ser Thr Lys  
180 185 190  
  
.e Thr Val Glu Thr Ala Cys Lys Glu Tyr Lys His Ser Phe Lys Gln  
195 200 205  
  
.r Trp Met Asn Asn Met Met Lys Thr Ser Glu Ala Lys Ile Lys His  
210 215 220  
  
.e Asp Gly Glu Asp Tyr Thr Cys Ile Thr Phe Gln Pro Asp Leu Ser  
5 230 235 240  
  
.s Phe Lys Met Glu Lys Leu Asp Lys Asp Ile Val Ala Leu Met Thr  
245 250 255

## eolf-seql-S000001.txt

cg Arg Ala Tyr Asp Leu Ala Gly Ser Cys Arg Gly Val Lys Val Met  
260 265 270

ie Asn Gly Lys Lys Leu Pro Val Asn Gly Phe Arg Ser Tyr Val Asp  
275 280 285

eu Tyr Val Lys Asp Lys Leu Asp Glu Thr Gly Val Ala Leu Lys Val  
290 295 300

le His Glu Leu Ala Asn Glu Arg Trp Asp Val Cys Leu Thr Leu Ser  
315 320

lu Lys Gly Phe Gln Gln Ile Ser Phe Val Asn Ser Ile Ala Thr Thr  
325 330 335

's Gly Gly Arg His Val Asp Tyr Val Val Asp Gln Val Val Gly Lys  
340 345 350

eu Ile Glu Val Val Lys Lys Asn Lys Ala Gly Val Ser Val Lys  
355 360 365

eo Phe Gln Val Lys Asn His Ile Trp Val Phe Ile Asn Cys Leu Ile  
370 375 380

lu Asn Pro Thr Phe Asp Ser Gln Thr Lys Glu Asn Met Thr Leu Gln  
395 400

eo Lys Ser Phe Gly Ser Lys Cys Gln Leu Ser Glu Lys Phe Phe Lys  
405 410 415

a Ala Ser Asn Cys Gly Ile Val Glu Ser Ile Leu Asn Trp Val Lys  
420 425 430

e Lys Ala Gln Thr Gln Leu Asn Lys Lys Cys Ser Ser Val Lys Tyr  
435 440 445

r Lys Ile Lys Gly Ile Pro Lys Leu Asp Asp Ala Asn Asp Ala Gly  
450 455 460

y Lys His Ser Leu Glu Cys Thr Leu Ile Leu Thr Glu Gly Asp Ser  
470 475 480

## eolf-seql-S000001.txt

.a Lys Ser Leu Ala Val Ser Gly Leu Gly Val Ile Gly Arg Asp Arg  
485 490 495

'r Gly Val Phe Pro Leu Arg Gly Lys Ile Leu Asn Val Arg Glu Ala  
500 505 510

'r His Lys Gln Ile Met Glu Asn Ala Glu Ile Asn Asn Ile Ile Lys  
515 520 525

.e Val Gly Leu Gln Tyr Lys Lys Ser Tyr Asp Asp Ala Glu Ser Leu  
530 535 540

's Thr Leu Arg Tyr Gly Lys Ile Met Ile Met Thr Asp Gln Asp Gln  
5 550 555 560

p Gly Ser His Ile Lys Gly Leu Leu Ile Asn Phe Ile His His Asn  
565 570 575

p Pro Ser Leu Leu Lys His Gly Phe Leu Glu Glu Phe Ile Thr Pro  
580 585 590

e Val Lys Ala Ser Lys Asn Lys Gln Glu Leu Ser Phe Tyr Ser Ile  
595 600 605

o Glu Phe Asp Glu Trp Lys Lys His Ile Glu Asn Gln Lys Ala Trp  
610 615 620

s Ile Lys Tyr Tyr Lys Gly Leu Gly Thr Ser Thr Ala Lys Glu Ala  
5 630 635 640

s Glu Tyr Phe Ala Asp Met Glu Arg His Arg Ile Leu Phe Arg Tyr  
645 650 655

a Gly Pro Glu Asp Asp Ala Ala Ile Thr Leu Ala Phe Ser Lys Lys  
660 665 670

s Ile Asp Asp Arg Lys Glu Trp Leu Thr Asn Phe Met Glu Asp Arg  
675 680 685

g Gln Arg Arg Leu His Gly Leu Pro Glu Gln Phe Leu Tyr Gly Thr

eolf-seql-S000001.txt  
690 695 700

la Thr Lys His Leu Thr Tyr Asn Asp Phe Ile Asn Lys Glu Leu Ile  
705 710 715 720

eu Phe Ser Asn Ser Asp Asn Glu Arg Ser Ile Pro Ser Leu Val Asp  
725 730 735

ly Phe Lys Pro Gly Gln Arg Lys Val Leu Phe Thr Cys Phe Lys Arg  
740 745 750

sn Asp Lys Arg Glu Val Lys Val Ala Gln Leu Ala Gly Ser Val Ala  
755 760 765

lu Met Ser Ala Tyr His His Gly Glu Gln Ala Leu Met Met Thr Ile  
770 775 780

il Asn Leu Ala Gln Asn Phe Val Gly Ser Asn Asn Ile Asn Leu Leu  
775 790 795 800

en Pro Ile Gly Gln Phe Gly Thr Arg Leu His Gly Gly Lys Asp Ala  
805 810 815

ea Ser Pro Arg Tyr Ile Phe Thr Met Leu Ser Thr Leu Ala Arg Leu  
820 825 830

eu Phe Pro Ala Val Asp Asp Asn Leu Leu Lys Phe Leu Tyr Asp Asp  
835 840 845

en Gln Arg Val Glu Pro Glu Trp Tyr Ile Pro Ile Ile Pro Met Val  
850 855 860

eu Ile Asn Gly Ala Glu Gly Ile Gly Thr Gly Trp Ala Cys Lys Leu  
855 870 875 880

eo Asn Tyr Asp Ala Arg Glu Ile Val Asn Asn Val Arg Arg Met Leu  
885 890 895

p Gly Leu Asp Pro His Pro Met Leu Pro Asn Tyr Lys Asn Phe Lys  
900 905 910

eolf-seql-S000001.txt

ly Thr Ile Gln Glu Leu Gly Gln Asn Gln Tyr Ala Val Ser Gly Glu  
915 920 925

le Phe Val Val Asp Arg Asn Thr Val Glu Ile Thr Glu Leu Pro Val  
930 935 940

tg Thr Trp Thr Gln Val Tyr Lys Glu Gln Val Leu Glu Pro Met Leu  
945 950 955 960

sn Gly Thr Asp Lys Thr Pro Ala Leu Ile Ser Asp Tyr Lys Glu Tyr  
965 970 975

.s Thr Asp Thr Thr Val Lys Phe Val Val Lys Met Thr Glu Glu Lys  
980 985 990

eu Ala Gln Ala Glu Ala Ala Gly Leu His Lys Val Phe Lys Leu Gln  
995 1000 1005

ur Thr Leu Thr Cys Asn Ser Met Val Leu Phe Asp His Met Gly  
1010 1015 1020

's Leu Lys Lys Tyr Glu Thr Val Gln Asp Ile Leu Lys Glu Phe  
1025 1030 1035

re Asp Leu Arg Leu Ser Tyr Tyr Gly Leu Arg Lys Glu Trp Leu  
1040 1045 1050

l Gly Met Leu Gly Ala Glu Ser Thr Lys Leu Asn Asn Gln Ala  
1055 1060 1065

g Phe Ile Leu Glu Lys Ile Gln Gly Lys Ile Thr Ile Glu Asn  
1070 1075 1080

g Ser Lys Lys Asp Leu Ile Gln Met Leu Val Gln Arg Gly Tyr  
1085 1090 1095

u Ser Asp Pro Val Lys Ala Trp Lys Glu Ala Gln Glu Lys Ala  
1100 1105 1110

a Glu Glu Asp Glu Thr Gln Asn Gln His Asp Asp Ser Ser Ser  
1115 1120 1125

## eolf-seql-S000001.txt

sp Ser Gly Thr Pro Ser Gly Pro Asp Phe Asn Tyr Ile Leu Asn  
1130 1135 1140

et Ser Leu Trp Ser Leu Thr Lys Glu Lys Val Glu Glu Leu Ile  
1145 1150 1155

's Gln Arg Asp Ala Lys Gly Arg Glu Val Asn Asp Leu Lys Arg  
1160 1165 1170

's Ser Pro Ser Asp Leu Trp Lys Glu Asp Leu Ala Ala Phe Val  
1175 1180 1185

.u Glu Leu Asp Lys Val Glu Ser Gln Glu Arg Glu Asp Val Leu  
1190 1195 1200

.a Gly Met Ser Gly Lys Ala Ile Lys Gly Lys Val Gly Lys Pro  
1205 1210 1215

's Val Lys Lys Leu Gln Leu Glu Glu Thr Met Pro Ser Pro Tyr  
1220 1225 1230

.y Arg Arg Ile Ile Pro Glu Ile Thr Ala Met Lys Ala Asp Ala  
1235 1240 1245

.r Lys Lys Leu Leu Lys Lys Lys Lys Gly Asp Leu Asp Thr Ala  
1250 1255 1260

a Val Lys Val Glu Phe Asp Glu Glu Phe Ser Gly Ala Pro Val  
1265 1270 1275

u Gly Ala Gly Glu Glu Ala Leu Thr Pro Ser Val Pro Ile Asn  
1280 1285 1290

s Gly Pro Lys Pro Lys Arg Glu Lys Lys Glu Pro Gly Thr Arg  
1295 1300 1305

l Arg Lys Thr Pro Thr Ser Ser Gly Lys Pro Ser Ala Lys Lys  
1310 1315 1320

l Lys Lys Arg Asn Pro Trp Ser Asp Asp Glu Ser Lys Ser Glu  
1325 1330 1335

## eolf-seql-S000001.txt

r Asp Leu Glu Glu Thr Glu Pro Val Val Ile Pro Arg Asp Ser  
1340 1345 1350

u Leu Arg Arg Ala Ala Ala Glu Arg Pro Lys Tyr Thr Phe Asp  
1355 1360 1365

e Ser Glu Glu Glu Asp Asp Asp Ala Asp Asp Asp Asp Asp Asp  
1370 1375 1380

n Asn Asp Leu Glu Glu Leu Lys Val Lys Ala Ser Pro Ile Thr  
1385 1390 1395

n Asp Gly Glu Asp Glu Phe Val Pro Ser Asp Gly Leu Asp Lys  
1400 1405 1410

p Glu Tyr Thr Phe Ser Pro Gly Lys Ser Lys Ala Thr Pro Glu  
1415 1420 1425

s Ser Leu His Asp Lys Lys Ser Gln Asp Phe Gly Asn Leu Phe  
1430 1435 1440

r Phe Pro Ser Tyr Ser Gln Lys Ser Glu Asp Asp Ser Ala Lys  
1445 1450 1455

e Asp Ser Asn Glu Glu Asp Ser Ala Ser Val Phe Ser Pro Ser  
1460 1465 1470

e Gly Leu Lys Gln Thr Asp Lys Val Pro Ser Lys Thr Val Ala  
1475 1480 1485

a Lys Lys Gly Lys Pro Ser Ser Asp Thr Val Pro Lys Pro Lys  
1490 1495 1500

g Ala Pro Lys Gln Lys Lys Val Val Glu Ala Val Asn Ser Asp  
1505 1510 1515

r Asp Ser Glu Phe Gly Ile Pro Lys Lys Thr Thr Thr Pro Lys  
1520 1525 1530

y Lys Gly Arg Gly Ala Lys Lys Arg Lys Ala Ser Gly Ser Glu

eolf-seql-S000001.txt  
1535 1540 1545  
  
sn Glu Gly Asp Tyr Asn Pro Gly Arg Lys Thr Ser Lys Thr Thr  
1550 1555 1560  
  
er Lys Lys Pro Lys Lys Thr Ser Phe Asp Gln Asp Ser Asp Val  
1565 1570 1575  
  
sp Ile Phe Pro Ser Asp Phe Pro Thr Glu Pro Pro Ser Leu Pro  
1580 1585 1590  
  
tg Thr Gly Arg Ala Arg Lys Glu Val Lys Tyr Phe Ala Glu Ser  
1595 1600 1605  
  
sp Glu Glu Glu Asp Asp Val Asp Phe Ala Met Phe Asn  
1610 1615 1620  
  
!10> 180  
!11> 228  
!12> PRT  
!13> Homo sapiens  
  
.00> 180  
  
.t Leu Ser Arg Cys Arg Ser Gly Leu Leu His Val Leu Gly Leu Ser  
5 10 15  
  
.e Leu Leu Gln Thr Arg Arg Pro Ile Leu Leu Cys Ser Pro Arg Leu  
20 25 30  
  
.t Lys Pro Leu Val Val Phe Val Leu Gly Gly Pro Gly Ala Gly Lys  
35 40 45  
  
.y Thr Gln Cys Ala Arg Ile Val Glu Lys Tyr Gly Tyr Thr His Leu  
50 55 60  
  
.r Ala Gly Glu Leu Leu Arg Asp Glu Arg Lys Asn Pro Asp Ser Gln  
70 75 80  
  
.r Gly Glu Leu Ile Glu Lys Tyr Ile Lys Glu Gly Lys Ile Val Pro  
85 90 95  
  
.l Glu Ile Thr Ile Ser Leu Leu Lys Arg Glu Met Asp Gln Thr Met

## eolf-seql-S000001.txt

100 105 110

a Ala Asn Ala Gln Lys Asn Lys Phe Leu Ile Asp Gly Phe Pro Arg  
115 120 125

n Gln Asp Asn Leu Gln Gly Trp Asn Lys Thr Met Asp Gly Lys Ala  
130 135 140

p Val Ser Phe Val Leu Phe Phe Asp Cys Asn Asn Glu Ile Cys Ile  
5 150 155 160

u Arg Cys Leu Glu Arg Gly Lys Ser Ser Gly Arg Ser Asp Asp Asn  
165 170 175

g Glu Ser Leu Glu Lys Arg Ile Gln Thr Tyr Leu Gln Ser Thr Lys  
180 185 190

o Ile Ile Asp Leu Tyr Glu Glu Met Gly Lys Val Lys Lys Ile Asp  
195 200 205

a Ser Lys Ser Val Asp Glu Val Phe Asp Glu Val Val Gln Ile Phe  
210 215 220

p Lys Glu Gly  
5

10> 181  
11> 268  
12> PRT  
13> Homo sapiens

00> 181

t Val Leu Glu Ser Thr Met Val Cys Val Asp Asn Ser Glu Tyr Met  
5 10 15

g Asn Gly Asp Phe Leu Pro Thr Arg Leu Gln Ala Gln Gln Asp Ala  
20 25 30

l Asn Ile Val Cys His Ser Lys Thr Arg Ser Asn Pro Glu Asn Asn  
35 40 45

l Gly Leu Ile Thr Leu Ala Asn Asp Cys Glu Val Leu Thr Thr Leu

eolf-seql-S000001.txt  
50 55 60

ir Pro Asp Thr Gly Arg Ile Leu Ser Lys Leu His Thr Val Gln Pro  
; 70 75 80

/s Gly Lys Ile Thr Phe Cys Thr Gly Ile Arg Val Ala His Leu Ala  
85 90 95

eu Lys His Arg Gln Gly Lys Asn His Lys Met Arg Ile Ile Ala Phe  
100 105 110

il Gly Ser Pro Val Glu Asp Asn Glu Lys Asp Leu Val Lys Leu Ala  
115 120 125

's Arg Leu Lys Lys Glu Lys Val Asn Val Asp Ile Ile Asn Phe Gly  
130 135 140

.u Glu Glu Val Asn Thr Glu Lys Leu Thr Ala Phe Val Asn Thr Leu  
.5 150 155 160

n Gly Lys Asp Gly Thr Gly Ser His Leu Val Thr Val Pro Pro Gly  
165 170 175

o Ser Leu Ala Asp Ala Leu Ile Ser Ser Pro Ile Leu Ala Gly Glu  
180 185 190

y Gly Ala Met Leu Gly Leu Gly Ala Ser Asp Phe Glu Phe Gly Val  
195 200 205

p Pro Ser Ala Asp Pro Glu Leu Ala Leu Ala Leu Arg Val Ser Met  
210 215 220

u Glu Gln Arg Gln Arg Gln Glu Glu Glu Ala Arg Arg Ala Ala Ala  
5 230 235 240

a Ser Ala Ala Glu Ala Gly Ile Ala Thr Thr Gly Thr Glu Gly Glu  
245 250 255

g Gly Gly Ile Arg Ser Pro Gly Thr Ala Gly Cys  
260 265

## eolf-seql-S000001.txt

:10> 182  
:11> 162  
:12> PRT  
:13> Homo sapiens

:00> 182

:t Lys Glu Thr Ile Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala  
5 10 15

:n Val Arg Ile Gly Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val  
20 25 30

:l His Arg Thr Ala Thr Ala Asp Asp Lys Lys Leu Gln Phe Ser Leu  
35 40 45

:s Lys Leu Gly Val Asn Asn Ile Ser Gly Ile Glu Glu Val Asn Met  
50 55 60

:e Thr Asn Gln Gly Thr Val Ile His Phe Asn Asn Pro Lys Val Gln  
70 75 80

:a Ser Leu Ala Ala Asn Thr Phe Thr Ile Thr Gly His Ala Glu Thr  
85 90 95

:s Gln Leu Thr Glu Met Leu Pro Ser Ile Leu Asn Gln Leu Gly Ala  
100 105 110

:p Ser Leu Thr Ser Leu Arg Arg Leu Ala Glu Ala Leu Pro Lys Gln  
115 120 125

:r Val Asp Gly Lys Ala Pro Leu Ala Thr Gly Glu Asp Asp Asp Asp  
130 135 140

:u Val Pro Asp Leu Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu  
5 150 155 160

:a Asn

10> 183  
11> 193  
12> PRT  
13> Homo sapiens

## eolf-seql-S000001.txt

100&gt; 183

et Ala Ala Ile Arg Lys Lys Leu Val Ile Val Gly Asp Gly Ala Cys  
5 10 15

.y Lys Thr Cys Leu Leu Ile Val Phe Ser Lys Asp Gln Phe Pro Glu  
20 25 30

al Tyr Val Pro Thr Val Phe Glu Asn Tyr Val Ala Asp Ile Glu Val  
35 40 45

ip Gly Lys Gln Val Glu Leu Ala Leu Trp Asp Thr Ala Gly Gln Glu  
50 55 60

ip Tyr Asp Arg Leu Arg Pro Leu Ser Tyr Pro Asp Thr Asp Val Ile  
70 75 80

eu Met Cys Phe Ser Ile Asp Ser Pro Asp Ser Leu Glu Asn Ile Pro  
85 90 95

u Lys Trp Thr Pro Glu Val Lys His Phe Cys Pro Asn Val Pro Ile  
100 105 110

e Leu Val Gly Asn Lys Lys Asp Leu Arg Asn Asp Glu His Thr Arg  
115 120 125

g Glu Leu Ala Lys Met Lys Gln Glu Pro Val Lys Pro Glu Glu Gly  
130 135 140

g Asp Met Ala Asn Arg Ile Gly Ala Phe Gly Tyr Met Glu Cys Ser  
5 150 155 160

a Lys Thr Lys Asp Gly Val Arg Glu Val Phe Glu Met Ala Thr Arg  
165 170 175

a Ala Leu Gln Ala Arg Arg Gly Lys Lys Lys Ser Gly Cys Leu Val  
180 185 190

u

## eolf-seql-S000001.txt

:10> 184  
:11> 334  
:12> PRT  
:13> Homo sapiens

00> 184

t Ala Thr Leu Lys Glu Lys Leu Ile Ala Pro Val Ala Glu Glu  
5 10 15

a Thr Val Pro Asn Asn Lys Ile Thr Val Val Gly Val Gly Gln Val  
20 25 30

y Met Ala Cys Ala Ile Ser Ile Leu Gly Lys Ser Leu Ala Asp Glu  
35 40 45

u Ala Leu Val Asp Val Leu Glu Asp Lys Leu Lys Gly Glu Met Met  
50 55 60

p Leu Gln His Gly Ser Leu Phe Leu Gln Thr Pro Lys Ile Val Ala  
70 75 80

p Lys Asp Tyr Ser Val Thr Ala Asn Ser Lys Ile Val Val Val Thr  
85 90 95

a Gly Val Arg Gln Gln Glu Gly Glu Ser Arg Leu Asn Leu Val Gln  
100 105 110

g Asn Val Asn Val Phe Lys Phe Ile Ile Pro Gln Ile Val Lys Tyr  
115 120 125

r Pro Asp Cys Ile Ile Ile Val Val Ser Asn Pro Val Asp Ile Leu  
130 135 140

r Tyr Val Thr Trp Lys Leu Ser Gly Leu Pro Lys His Arg Val Ile  
5 150 155 160

y Ser Gly Cys Asn Leu Asp Ser Ala Arg Phe Arg Tyr Leu Met Ala  
165 170 175

l Lys Leu Gly Ile His Pro Ser Ser Cys His Gly Trp Ile Leu Gly  
180 185 190

eolf-seql-S000001.txt

lu His Gly Asp Ser Ser Val Ala Val Trp Ser Gly Val Asn Val Ala  
195 200 205

ly Val Ser Leu Gln Glu Leu Asn Pro Glu Met Gly Thr Asp Asn Asp  
210 215 220

er Glu Asn Trp Lys Glu Val His Lys Met Val Val Glu Ser Ala Tyr  
25 230 235 240

lu Val Ile Lys Leu Lys Gly Tyr Thr Asn Trp Ala Ile Gly Leu Ser  
245 250 255

al Ala Asp Leu Ile Glu Ser Met Leu Lys Asn Leu Ser Arg Ile His  
260 265 270

eo Val Ser Thr Met Val Lys Gly Met Tyr Gly Ile Glu Asn Glu Val  
275 280 285

ie Leu Ser Leu Pro Cys Ile Leu Asn Ala Arg Gly Leu Thr Ser Val  
290 295 300

e Asn Gln Lys Leu Lys Asp Asp Glu Val Ala Gln Leu Lys Lys Ser  
15 310 315 320

a Asp Thr Leu Trp Asp Ile Gln Lys Asp Leu Lys Asp Leu  
325 330

:10> 185  
11> 343  
12> PRT  
13> Homo sapiens

00> 185

t Trp Pro Asn Gly Ser Ser Leu Gly Pro Cys Phe Arg Pro Thr Asn  
5 10 15

e Thr Leu Glu Glu Arg Arg Leu Ile Ala Ser Pro Trp Phe Ala Ala  
20 25 30

r Phe Cys Val Val Gly Leu Ala Ser Asn Leu Leu Ala Leu Ser Val  
35 40 45

eolf-seql-S000001.txt  
eu Ala Gly Ala Arg Gln Gly Gly Ser His Thr Arg Ser Ser Phe Leu  
50 55 60

ir Phe Leu Cys Gly Leu Val Leu Thr Asp Phe Leu Gly Leu Leu Val  
5 70 75 80

ar Gly Thr Ile Val Val Ser Gln His Ala Ala Leu Phe Glu Trp His  
85 90 95

la Val Asp Pro Gly Cys Arg Leu Cys Arg Phe Met Gly Val Val Met  
100 105 110

le Phe Phe Gly Leu Ser Pro Leu Leu Leu Gly Ala Ala Met Ala Ser  
115 120 125

lu Arg Tyr Leu Gly Ile Thr Arg Pro Phe Ser Arg Pro Ala Val Ala  
130 135 140

er Gln Arg Arg Ala Trp Ala Thr Val Gly Leu Val Trp Ala Ala Ala  
145 150 155 160

eu Ala Leu Gly Leu Leu Pro Leu Leu Gly Val Gly Arg Tyr Thr Val  
165 170 175

n Tyr Pro Gly Ser Trp Cys Phe Leu Thr Leu Gly Ala Glu Ser Gly  
180 185 190

ip Val Ala Phe Gly Leu Leu Phe Ser Met Leu Gly Gly Leu Ser Val  
195 200 205

y Leu Ser Phe Leu Leu Asn Thr Val Ser Val Ala Thr Leu Cys His  
210 215 220

l Tyr His Gly Gln Glu Ala Ala Gln Gln Arg Pro Arg Asp Ser Glu  
5 230 235 240

l Glu Met Met Ala Gln Leu Leu Gly Ile Met Val Val Ala Ser Val  
245 250 255

s Trp Leu Pro Leu Leu Val Phe Ile Ala Gln Thr Val Leu Arg Asn  
260 265 270

## eolf-seql-S000001.txt

:o Pro Ala Met Ser Pro Ala Gly Gln Leu Ser Arg Thr Thr Glu Lys  
275 280 285

:u Leu Leu Ile Tyr Leu Arg Val Ala Thr Trp Asn Gln Ile Leu Asp  
290 295 300

:o Trp Val Tyr Ile Leu Phe Arg Arg Ala Val Leu Arg Arg Leu Gln  
305 310 315 320

:o Arg Leu Ser Thr Arg Pro Arg Ser Leu Ser Leu Gln Pro Gln Leu  
325 330 335

:r Gln Arg Ser Gly Leu Gln  
340

:10> 186

:11> 477

:12> PRT

:13> Homo sapiens

:00> 186

:t Ala Asn Met Gln Gly Leu Val Glu Arg Leu Glu Arg Ala Val Ser  
5 10 15

:g Leu Glu Ser Leu Ser Ala Glu Ser His Arg Pro Pro Gly Asn Cys  
20 25 30

:y Glu Val Asn Gly Val Ile Ala Gly Val Ala Pro Ser Val Glu Ala  
35 40 45

:e Asp Lys Leu Met Asp Ser Met Val Ala Glu Phe Leu Lys Asn Ser  
50 55 60

:g Ile Leu Ala Gly Asp Val Glu Thr His Ala Glu Met Val His Ser  
70 75 80

:a Phe Gln Ala Gln Arg Ala Phe Leu Leu Met Ala Ser Gln Tyr Gln  
85 90 95

:n Pro His Glu Asn Asp Val Ala Ala Leu Leu Lys Pro Ile Ser Glu  
100 105 110

## eolf-seql-S000001.txt

/s Ile Gln Glu Ile Gln Thr Phe Arg Glu Arg Asn Arg Gly Ser Asn  
115 120 125

\t Phe Asn His Leu Ser Ala Val Ser Glu Ser Ile Pro Ala Leu Gly  
130 135 140

:p Ile Ala Val Ser Pro Lys Pro Gly Pro Tyr Val Lys Glu Met Asn  
15 150 155 160

:p Ala Ala Thr Phe Tyr Thr Asn Arg Val Leu Lys Asp Tyr Lys His  
165 170 175

\r Asp Leu Arg His Val Asp Trp Val Lys Ser Tyr Leu Asn Ile Trp  
180 185 190

\r Glu Leu Gln Ala Tyr Ile Lys Glu His His Thr Thr Gly Leu Thr  
195 200 205

:p Ser Lys Thr Gly Pro Val Ala Ser Thr Val Ser Ala Phe Ser Val  
210 215 220

:u Ser Ser Gly Pro Gly Leu Pro Pro Pro Pro Pro Pro Leu Pro Pro  
5 230 235 240

\o Gly Pro Pro Pro Leu Phe Glu Asn Glu Gly Lys Lys Glu Glu Ser  
245 250 255

\r Pro Ser Arg Ser Ala Leu Phe Ala Gln Leu Asn Gln Gly Glu Ala  
260 265 270

\e Thr Lys Gly Leu Arg His Val Thr Asp Asp Gln Lys Thr Tyr Lys  
275 280 285

\n Pro Ser Leu Arg Ala Gln Gly Gly Gln Thr Gln Ser Pro Thr Lys  
290 295 300

\r His Thr Pro Ser Pro Thr Ser Pro Lys Ser Tyr Pro Ser Gln Lys  
5 310 315 320

\s Ala Pro Val Leu Glu Leu Glu Gly Lys Lys Trp Arg Val Glu Tyr  
325 330 335

## eolf-seql-S000001.txt

In Glu Asp Arg Asn Asp Leu Val Ile Ser Glu Thr Glu Leu Lys Gln  
340 345 350

al Ala Tyr Ile Phe Lys Cys Glu Lys Ser Thr Ile Gln Ile Lys Gly  
355 360 365

/s Val Asn Ser Ile Ile Ile Asp Asn Cys Lys Lys Leu Gly Leu Val  
370 375 380

ie Asp Asn Val Val Gly Ile Val Glu Val Ile Asn Ser Gln Asp Ile  
35 390 395 400

.n Ile Gln Val Met Gly Arg Val Pro Thr Ile Ser Ile Asn Lys Thr  
405 410 415

.u Gly Cys His Ile Tyr Leu Ser Glu Asp Ala Leu Asp Cys Glu Ile  
420 425 430

al Ser Ala Lys Ser Ser Glu Met Asn Ile Leu Ile Pro Gln Asp Gly  
435 440 445

ip Tyr Arg Glu Phe Pro Ile Pro Glu Gln Phe Lys Thr Ala Trp Asp  
450 455 460

y Ser Lys Leu Ile Thr Glu Pro Ala Glu Ile Met Ala  
45 470 475

10> 187

11> 309

12> PRT

13> Homo sapiens

00> 187

t Asp Glu Lys Val Phe Thr Lys Glu Leu Asp Gln Trp Ile Glu Gln  
5 10 15

u Asn Glu Cys Lys Gln Leu Ser Glu Ser Gln Val Lys Ser Leu Cys  
20 25 30

u Lys Ala Lys Glu Ile Leu Thr Lys Glu Ser Asn Val Gln Glu Val  
35 40 45

## eolf-seql-S000001.txt

rg Cys Pro Val Thr Val Cys Gly Asp Val His Gly Gln Phe His Asp  
50 55 60

eu Met Glu Leu Phe Arg Ile Gly Gly Lys Ser Pro Asp Thr Asn Tyr  
5 70 75 80

eu Phe Met Gly Asp Tyr Val Asp Arg Gly Tyr Tyr Ser Val Glu Thr  
85 90 95

il Thr Leu Leu Val Ala Leu Lys Val Arg Tyr Arg Glu Arg Ile Thr  
100 105 110

.e Leu Arg Gly Asn His Glu Ser Arg Gln Ile Thr Gln Val Tyr Gly  
115 120 125

ie Tyr Asp Glu Cys Leu Arg Lys Tyr Gly Asn Ala Asn Val Trp Lys  
130 135 140

r Phe Thr Asp Leu Phe Asp Tyr Leu Pro Leu Thr Ala Leu Val Asp  
5 150 155 160

y Gln Ile Phe Cys Leu His Gly Gly Leu Ser Pro Ser Ile Asp Thr  
165 170 175

u Asp His Ile Arg Ala Leu Asp Arg Leu Gln Glu Val Pro His Glu  
180 185 190

y Pro Met Cys Asp Leu Leu Trp Ser Asp Pro Asp Asp Arg Gly Gly  
195 200 205

p Gly Ile Ser Pro Arg Gly Ala Gly Tyr Thr Phe Gly Gln Asp Ile  
210 215 220

r Glu Thr Phe Asn His Ala Asn Gly Leu Thr Leu Val Ser Arg Ala  
5 230 235 240

s Gln Leu Val Met Glu Gly Tyr Asn Trp Cys His Asp Arg Asn Val  
245 250 255

l Thr Ile Phe Ser Ala Pro Asn Tyr Cys Tyr Arg Cys Gly Asn Gln

## eolf-seql-S000001.txt

260

265

270

la Ala Ile Met Glu Leu Asp Asp Thr Leu Lys Tyr Ser Phe Leu Gln  
275 280 285

he Asp Pro Ala Pro Arg Arg Gly Glu Pro His Val Thr Arg Arg Thr  
290 295 300

ro Asp Tyr Phe Leu  
35

210> 188

211> 169

212> PRT

213> Homo sapiens

400> 188

et Ala Ala Leu Leu Leu Arg His Val Gly Arg His Cys Leu Arg Ala  
5 10 15

is Phe Ser Pro Gln Leu Cys Ile Arg Asn Ala Val Pro Leu Gly Thr  
20 25 30

ir Ala Lys Glu Glu Met Glu Arg Phe Trp Asn Lys Asn Ile Gly Ser  
35 40 45

sn Arg Pro Leu Ser Pro His Ile Thr Ile Tyr Ser Trp Ser Leu Pro  
50 55 60

et Ala Met Ser Ile Cys His Arg Gly Thr Gly Ile Ala Leu Ser Ala  
70 75 80

.y Val Ser Leu Phe Gly Met Ser Ala Leu Leu Leu Pro Gly Asn Phe  
85 90 95

.u Ser Tyr Leu Glu Leu Val Lys Ser Leu Cys Leu Gly Pro Ala Leu  
100 105 110

.e His Thr Ala Lys Phe Ala Leu Val Phe Pro Leu Met Tyr His Thr  
115 120 125

p Asn Gly Ile Arg His Leu Met Trp Asp Leu Gly Lys Gly Leu Lys

130 eolf-seql-S000001.txt  
135 140

le Pro Gln Leu Tyr Gln Ser Gly Val Val Val Leu Val Leu Thr Val  
45 150 155 160

eu Ser Ser Met Gly Leu Ala Ala Met  
165

210> 189  
211> 201  
212> PRT  
213> Homo sapiens

400> 189

st Thr Glu Lys Ala Pro Glu Pro His Val Glu Glu Asp Asp Asp Asp  
5 10 15

lu Leu Asp Ser Lys Leu Asn Tyr Lys Pro Pro Pro Gln Lys Ser Leu  
20 25 30

's Glu Leu Gln Glu Met Asp Lys Asp Asp Glu Ser Leu Ile Lys Tyr  
35 40 45

's Lys Thr Leu Leu Gly Asp Gly Pro Val Val Thr Asp Pro Lys Ala  
50 55 60

o Asn Val Val Val Thr Arg Leu Thr Leu Val Cys Glu Ser Ala Pro  
70 75 80

y Pro Ile Thr Met Asp Leu Thr Gly Asp Leu Glu Ala Leu Lys Lys  
85 90 95

u Thr Ile Val Leu Lys Glu Gly Ser Glu Tyr Arg Val Lys Ile His  
100 105 110

z Lys Val Asn Arg Asp Ile Val Ser Gly Leu Lys Tyr Val Gln His  
115 120 125

: Tyr Arg Thr Gly Val Lys Val Asp Lys Ala Thr Phe Met Val Gly  
130 135 140

: Tyr Gly Pro Arg Pro Glu Glu Tyr Glu Phe Leu Thr Pro Val Glu

eolf-seql-S000001.txt

15	150	155	160
----	-----	-----	-----

lu Ala Pro Lys Gly Met Leu Ala Arg Gly Thr Tyr His Asn Lys Ser  
165 170 175

ie Phe Thr Asp Asp Asp Lys Gln Asp His Leu Ser Trp Glu Trp Asn  
180 185 190

eu Ser Ile Lys Lys Glu Trp Thr Glu  
195 200

?10> 190

?11> 377

?12> PRT

?13> Homo sapiens

!00> 190

et Lys Phe Pro Gly Pro Leu Glu Asn Gln Arg Leu Ser Phe Leu Leu  
5 10 15

.u Lys Ala Ile Thr Arg Glu Ala Gln Met Trp Lys Val Asn Val Arg  
20 25 30

's Met Pro Ser Asn Gln Asn Val Ser Pro Ser Gln Arg Asp Glu Val  
35 40 45

e Gln Trp Leu Ala Lys Leu Lys Tyr Gln Phe Asn Leu Tyr Pro Glu  
50 55 60

r Phe Ala Leu Ala Ser Ser Leu Leu Asp Arg Phe Leu Ala Thr Val  
70 75 80

s Ala His Pro Lys Tyr Leu Ser Cys Ile Ala Ile Ser Cys Phe Phe  
85 90 95

u Ala Ala Lys Thr Val Glu Glu Asp Glu Arg Ile Pro Val Leu Lys  
100 105 110

l Leu Ala Arg Asp Ser Phe Cys Gly Cys Ser Ser Ser Glu Ile Leu  
115 120 125

g Met Glu Arg Ile Ile Leu Asp Lys Leu Asn Trp Asp Leu His Thr

eolf-seql-S000001.txt  
130 135 140

a Thr Pro Leu Asp Phe Leu His Ile Phe His Ala Ile Ala Val Ser  
15 150 155 160

ir Arg Pro Gln Leu Leu Phe Ser Leu Pro Lys Leu Ser Pro Ser Gln  
165 170 175

s Leu Ala Val Leu Thr Lys Gln Leu Leu His Cys Met Ala Cys Asn  
180 185 190

n Leu Leu Gln Phe Arg Gly Ser Met Leu Ala Leu Ala Met Val Ser  
195 200 205

eu Glu Met Glu Lys Leu Ile Pro Asp Trp Leu Ser Leu Thr Ile Glu  
210 215 220

u Leu Gln Lys Ala Gln Met Asp Ser Ser Gln Leu Ile His Cys Arg  
25 230 235 240

u Leu Val Ala His His Leu Ser Thr Leu Gln Ser Ser Leu Pro Leu  
245 250 255

n Ser Val Tyr Val Tyr Arg Pro Leu Lys His Thr Leu Val Thr Cys  
260 265 270

p Lys Gly Val Phe Arg Leu His Pro Ser Ser Val Pro Gly Pro Asp  
275 280 285

e Ser Lys Asp Asn Ser Lys Pro Glu Val Pro Val Arg Gly Thr Ala  
290 295 300

a Phe Tyr His His Leu Pro Ala Ala Ser Gly Cys Lys Gln Thr Ser  
5 310 315 320

r Lys Arg Lys Val Glu Glu Met Glu Val Asp Asp Phe Tyr Asp Gly  
325 330 335

e Lys Arg Leu Tyr Asn Glu Asp Asn Val Ser Glu Asn Val Gly Ser  
340 345 350

eolf-seql-S000001.txt  
al Cys Gly Thr Asp Leu Ser Arg Gln Glu Gly His Ala Ser Pro Cys  
355 360 365

ro Pro Leu Gln Pro Val Ser Val Met  
370 375

?10> 191  
?11> 282  
?12> PRT  
?13> Homo sapiens .

!00> 191

et Glu Arg Pro Ser Leu Arg Ala Leu Leu Leu Gly Ala Ala Gly Leu  
5 10 15

eu Leu Leu Leu Pro Leu Ser Ser Ser Ser Ser Asp Thr Cys  
20 25 30

-y Pro Cys Glu Pro Ala Ser Cys Pro Pro Leu Pro Pro Leu Gly Cys  
35 40 45

eu Leu Gly Glu Thr Arg Asp Ala Cys Gly Cys Cys Pro Met Cys Ala  
50 55 60

:g Gly Glu Gly Glu Pro Cys Gly Gly Gly Ala Gly Arg Gly Tyr  
; 70 75 80

's Ala Pro Gly Met Glu Cys Val Lys Ser Arg Lys Arg Arg Lys Gly  
85 90 95

's Ala Gly Ala Ala Ala Gly Gly Pro Gly Val Ser Gly Val Cys Val  
100 105 110

's Lys Ser Arg Tyr Pro Val Cys Gly Ser Asp Gly Thr Thr Tyr Pro  
115 120 125

r Gly Cys Gln Leu Arg Ala Ala Ser Gln Arg Ala Glu Ser Arg Gly  
130 135 140

u Lys Ala Ile Thr Gln Val Ser Lys Gly Thr Cys Glu Gln Gly Pro  
5 150 155 160

eolf-seql-S000001.txt  
er Ile Val Thr Pro Pro Lys Asp Ile Trp Asn Val Thr Gly Ala Gln  
165 170 175  
  
al Tyr Leu Ser Cys Glu Val Ile Gly Ile Pro Thr Pro Val Leu Ile  
180 185 190  
  
cp Asn Lys Val Lys Arg Gly His Tyr Gly Val Gln Arg Thr Glu Leu  
195 200 205  
  
eu Pro Gly Asp Arg Asp Asn Leu Ala Ile Gln Thr Arg Gly Gly Pro  
210 215 220  
  
.u Lys His Glu Val Thr Gly Trp Val Leu Val Ser Pro Leu Ser Lys  
25 230 235 240  
  
.u Asp Ala Gly Glu Tyr Glu Cys His Ala Ser Asn Ser Gln Gly Gln  
245 250 255  
  
.a Ser Ala Ser Ala Lys Ile Thr Val Val Asp Ala Leu His Glu Ile  
260 265 270  
  
.o Val Lys Lys Gly Glu Gly Ala Glu Leu  
275 280  
  
10> 192  
11> 339  
12> PRT  
13> Homo sapiens  
  
00> 192  
  
t Asp Gln Asn Asn Ser Leu Pro Pro Tyr Ala Gln Gly Leu Ala Ser  
5 10 15  
  
.o Gln Gly Ala Met Thr Pro Gly Ile Pro Ile Phe Ser Pro Met Met  
20 25 30  
  
.o Tyr Gly Thr Gly Leu Thr Pro Gln Pro Ile Gln Asn Thr Asn Ser  
35 40 45  
  
.u Ser Ile Leu Glu Glu Gln Gln Arg Gln Gln Gln Gln Gln Gln  
50 55 60

## eolf-seql-S000001.txt

In Gln  
5 70 75 80

In Gln Ala  
85 90 95

al Ala Ala Ala Ala Val Gln Gln Ser Thr Ser Gln Gln Ala Thr Gln  
100 105 110

ly Thr Ser Gly Gln Ala Pro Gln Leu Phe His Ser Gln Thr Leu Thr  
115 120 125

ir Ala Pro Leu Pro Gly Thr Thr Pro Leu Tyr Pro Ser Pro Met Thr  
130 135 140

co Met Thr Pro Ile Thr Pro Ala Thr Pro Ala Ser Glu Ser Ser Gly  
145 150 155 160

le Val Pro Gln Leu Gln Asn Ile Val Ser Thr Val Asn Leu Gly Cys  
165 170 175

's Leu Asp Leu Lys Thr Ile Ala Leu Arg Ala Arg Asn Ala Glu Tyr  
180 185 190

sn Pro Lys Arg Phe Ala Ala Val Ile Met Arg Ile Arg Glu Pro Arg  
195 200 205

ir Thr Ala Leu Ile Phe Ser Ser Gly Lys Met Val Cys Thr Gly Ala  
210 215 220

's Ser Glu Glu Gln Ser Arg Leu Ala Ala Arg Lys Tyr Ala Arg Val  
225 230 235 240

.1 Gln Lys Leu Gly Phe Pro Ala Lys Phe Leu Asp Phe Lys Ile Gln  
245 250 255

n Met Val Gly Ser Cys Asp Val Lys Phe Pro Ile Arg Leu Glu Gly  
260 265 270

u Val Leu Thr His Gln Gln Phe Ser Ser Tyr Glu Pro Glu Leu Phe  
275 280 285

## eolf-seql-S000001.txt

ro Gly Leu Ile Tyr Arg Met Ile Lys Pro Arg Ile Val Leu Leu Ile  
290 295 300

ie Val Ser Gly Lys Val Val Leu Thr Gly Ala Lys Val Arg Ala Glu  
305 310 315 320

le Tyr Glu Ala Phe Glu Asn Ile Tyr Pro Ile Leu Lys Gly Phe Arg  
325 330 335

/s Thr Thr

?10> 193

?11> 184

?12> PRT

?13> Homo sapiens

!00> 193

et Ala Ala Ala Gly Gly Ala Arg Leu Leu Arg Ala Ala Ser Ala Val  
5 10 15

eu Gly Gly Pro Ala Gly Arg Trp Leu His His Ala Gly Ser Arg Ala  
20 25 30

.y Ser Ser Gly Leu Leu Arg Asn Arg Gly Pro Gly Gly Ser Ala Glu  
35 40 45

.a Ser Arg Ser Leu Ser Val Ser Ala Arg Ala Arg Ser Ser Ser Glu  
50 55 60

:p Lys Ile Thr Val His Phe Ile Asn Arg Asp Gly Glu Thr Leu Thr  
70 75 80

ar Lys Gly Lys Val Gly Asp Ser Leu Leu Asp Val Val Val Glu Asn  
85 90 95

n Leu Asp Ile Asp Gly Phe Gly Ala Cys Glu Gly Thr Leu Ala Cys  
100 105 110

r Thr Cys His Leu Ile Phe Glu Asp His Ile Tyr Glu Lys Leu Asp  
115 120 125

## eolf-seql-S000001.txt

la Ile Thr Asp Glu Glu Asn Asp Met Leu Asp Leu Ala Tyr Gly Leu  
130 135 140

nr Asp Arg Ser Arg Leu Gly Cys Gln Ile Cys Leu Thr Lys Ser Met  
45 150 155 160

sp Asn Met Thr Val Arg Val Pro Glu Thr Val Ala Asp Ala Arg Gln  
165 170 175

er Ile Asp Val Gly Lys Thr Ser  
180

?10> 194  
?11> 206  
?12> PRT  
?13> Homo sapiens

100> 194

et Thr Ala Ser Val Leu Arg Ser Ile Ser Leu Ala Leu Arg Pro Thr  
5 10 15

er Gly Leu Leu Gly Thr Trp Gln Thr Gln Leu Arg Glu Thr His Gln  
20 25 30

ng Ala Ser Leu Leu Ser Phe Trp Glu Leu Ile Pro Met Arg Ser Glu  
35 40 45

to Leu Arg Lys Lys Lys Val Asp Pro Lys Lys Asp Gln Glu Ala  
50 55 60

rs Glu Arg Leu Lys Arg Lys Ile Arg Lys Leu Glu Lys Ala Thr Gln  
70 75 80

u Leu Ile Pro Ile Glu Asp Phe Ile Thr Pro Leu Lys Phe Leu Asp  
85 90 95

s Ala Arg Glu Arg Pro Gln Val Glu Leu Thr Phe Glu Glu Thr Glu  
100 105 110

g Arg Ala Leu Leu Leu Lys Lys Trp Ser Leu Tyr Lys Gln Gln Glu  
115 120 125

## eolf-seql-S000001.txt

rg Lys Met Glu Arg Asp Thr Ile Arg Ala Met Leu Glu Ala Gln Gln  
130 135 140

lu Ala Leu Glu Glu Leu Gln Leu Glu Ser Pro Lys Leu His Ala Glu  
15 150 155 160

la Ile Lys Arg Asp Pro Asn Leu Phe Pro Phe Glu Lys Glu Gly Pro  
165 170 175

is Tyr Thr Pro Pro Ile Pro Asn Tyr Gln Pro Pro Glu Gly Arg Tyr  
180 185 190

sn Asp Ile Thr Lys Val Tyr Thr Gln Val Glu Phe Lys Arg  
195 200 205

?10> 195

?11> 75

?12> PRT

?13> Homo sapiens

!00> 195

et Lys Gly Glu Thr Pro Val Asn Ser Thr Met Ser Ile Gly Gln Ala  
5 10 15

g Lys Met Val Glu Gln Leu Lys Ile Glu Ala Ser Leu Cys Arg Ile  
20 25 30

s Val Ser Lys Ala Ala Ala Asp Leu Met Thr Tyr Cys Asp Ala His  
35 40 45

a Cys Glu Asp Pro Leu Ile Thr Pro Val Pro Thr Ser Glu Asn Pro  
50 55 60

e Arg Glu Lys Lys Phe Phe Cys Ala Leu Leu  
70 75

10> 196

11> 317

12> PRT

13> Homo sapiens

00> 196

eolf-seql-S000001.txt  
et Arg Leu Gly Pro Arg Thr Ala Ala Leu Gly Leu Leu Leu Cys  
5 10 15  
  
la Ala Ala Ala Gly Ala Gly Lys Ala Glu Glu Leu His Tyr Pro Leu  
20 25 30  
  
ly Glu Arg Arg Ser Asp Tyr Asp Arg Glu Ala Leu Leu Gly Val Gln  
35 40 45  
  
lu Asp Val Asp Glu Tyr Val Lys Leu Gly His Glu Glu Gln Gln Lys  
50 55 60  
  
rg Leu Gln Ala Ile Ile Lys Lys Ile Asp Leu Asp Ser Asp Gly Phe  
5 70 75 80  
  
eu Thr Glu Ser Glu Leu Ser Ser Trp Ile Gln Met Ser Phe Lys His  
85 90 95  
  
yr Ala Met Gln Glu Ala Lys Gln Gln Phe Val Glu Tyr Asp Lys Asn  
100 105 110  
  
er Asp Asp Thr Val Thr Trp Asp Glu Tyr Asn Ile Gln Met Tyr Asp  
115 120 125  
  
og Val Ile Asp Phe Asp Glu Asn Thr Ala Leu Asp Asp Ala Glu Glu  
130 135 140  
  
.u Ser Phe Arg Lys Leu His Leu Lys Asp Lys Lys Arg Phe Glu Lys  
15 150 155 160  
  
.a Asn Gln Asp Ser Gly Pro Gly Leu Ser Leu Glu Glu Phe Ile Ala  
165 170 175  
  
ie Glu His Pro Glu Glu Val Asp Tyr Met Thr Glu Phe Val Ile Gln  
180 185 190  
  
.u Ala Leu Glu Glu His Asp Lys Asn Gly Asp Gly Phe Val Ser Leu  
195 200 205  
  
u Glu Phe Leu Gly Asp Tyr Arg Trp Asp Pro Thr Ala Asn Glu Asp  
210 215 220

## eolf-seql-s000001.txt

ro Glu Trp Ile Leu Val Glu Lys Asp Arg Phe Val Asn Asp Tyr Asp  
25 230 235 240

ys Asp Asn Asp Gly Arg Leu Asp Pro Gln Glu Leu Leu Pro Trp Val  
245 250 255

al Pro Asn Asn Gln Gly Ile Ala Gln Glu Glu Ala Leu His Leu Ile  
260 265 270

sp Glu Met Asp Leu Asn Gly Asp Lys Lys Leu Ser Glu Glu Glu Ile  
275 280 285

eu Glu Asn Pro Asp Leu Phe Leu Thr Ser Glu Ala Thr Asp Tyr Gly  
290 295 300

g Gln Leu His Asp Asp Tyr Phe Tyr His Asp Glu Leu  
310 315

?10> 197  
?11> 239  
?12> PRT  
?13> Homo sapiens

?100> 197

t Ala Pro Ser Val Pro Ala Ala Glu Pro Glu Tyr Pro Lys Gly Ile  
5 10 15

g Ala Val Leu Leu Gly Pro Pro Gly Ala Gly Lys Gly Thr Gln Ala  
20 25 30

o Arg Leu Ala Glu Asn Phe Cys Val Cys His Leu Ala Thr Gly Asp  
35 40 45

t Leu Arg Ala Met Val Ala Ser Gly Ser Glu Leu Gly Lys Lys Leu  
50 55 60

s Ala Thr Met Asp Ala Gly Lys Leu Val Ser Asp Glu Met Val Val  
70 75 80

u Leu Ile Glu Lys Asn Leu Glu Thr Pro Leu Cys Lys Asn Gly Phe  
85 90 95

## eolf-seql-S000001.txt

eu Leu Asp Gly Phe Pro Arg Thr Val Arg Gln Ala Glu Met Leu Asp  
100 105 110

sp Leu Met Glu Lys Arg Lys Glu Lys Leu Asp Ser Val Ile Glu Phe  
115 120 125

er Ile Pro Asp Ser Leu Leu Ile Arg Arg Ile Thr Gly Arg Leu Ile  
130 135 140

is Pro Lys Ser Gly Arg Ser Tyr His Glu Glu Phe Asn Pro Pro Lys  
45 150 155 160

lu Pro Met Lys Asp Asp Ile Thr Gly Glu Pro Leu Ile Arg Arg Ser  
165 170 175

sp Asp Asn Glu Lys Ala Leu Lys Ile Arg Leu Gln Ala Tyr His Thr  
180 185 190

In Thr Thr Pro Leu Ile Glu Tyr Tyr Arg Lys Arg Gly Ile His Ser  
195 200 205

la Ile Asp Ala Ser Gln Thr Pro Asp Val Val Phe Ala Ser Ile Leu  
210 215 220

.a Ala Phe Ser Lys Ala Thr Cys Lys Asp Leu Val Met Phe Ile  
25 230 235

:10> 198

:11> 217

:12> PRT

:13> Homo sapiens

:00> 198

et Ser Ser Lys Val Ser Arg Asp Thr Leu Tyr Glu Ala Val Arg Glu  
5 10 15

.1 Leu His Gly Asn Gln Arg Lys Arg Arg Lys Phe Leu Glu Thr Val  
20 25 30

u Leu Gln Ile Ser Leu Lys Asn Tyr Asp Pro Gln Lys Asp Lys Arg  
35 40 45

## eolf-seql-S000001.txt

he Ser Gly Thr Val Arg Leu Lys Ser Thr Pro Arg Pro Lys Phe Ser  
50 55 60

al Cys Val Leu Gly Asp Gln Gln His Cys Asp Glu Ala Lys Ala Val  
5 70 75 80

sp Ile Pro His Met Asp Ile Glu Ala Leu Lys Lys Leu Asn Lys Asn  
85 90 95

ys Lys Leu Val Lys Lys Leu Ala Lys Lys Tyr Asp Ala Phe Leu Ala  
100 105 110

er Glu Ser Leu Ile Lys Gln Ile Pro Arg Ile Leu Gly Pro Gly Leu  
115 120 125

sn Lys Ala Gly Lys Phe Pro Ser Leu Leu Thr His Asn Glu Asn Met  
130 135 140

al Ala Lys Val Asp Glu Val Lys Ser Thr Ile Lys Phe Gln Met Lys  
145 150 155 160

ys Val Leu Cys Leu Ala Val Ala Val Gly His Val Lys Met Thr Asp  
165 170 175

sp Glu Leu Val Tyr Asn Ile His Leu Ala Val Asn Phe Leu Val Ser  
180 185 190

eu Leu Lys Lys Asn Trp Gln Asn Val Arg Ala Leu Tyr Ile Lys Ser  
195 200 205

ir Met Gly Lys Pro Gln Arg Leu Tyr  
210 215

:10> 199  
:11> 150  
:12> PRT  
:13> Homo sapiens

00> 199

t Ser Lys Ile Ser Gln Gln Asn Ser Thr Pro Gly Val Asn Gly Ile  
5 10 15

## eolf-seql-S000001.txt

er Val Ile His Thr Gln Ala His Ala Ser Gly Leu Gln Gln Val Pro  
20 25 30

In Leu Val Pro Ala Gly Pro Gly Gly Gly Lys Ala Val Ala Pro  
35 40 45

er Lys Gln Ser Lys Lys Ser Ser Pro Met Asp Arg Asn Ser Asp Glu  
50 55 60

yr Arg Gln Arg Arg Glu Arg Asn Asn Met Ala Val Lys Lys Ser Arg  
5 70 75 80

eu Lys Ser Lys Gln Lys Ala Gln Asp Thr Leu Gln Arg Val Asn Gln  
85 90 95

eu Lys Glu Glu Asn Glu Arg Leu Glu Ala Lys Ile Lys Leu Leu Thr  
100 105 110

ys Glu Leu Ser Val Leu Lys Asp Leu Phe Leu Glu His Ala His Asn  
115 120 125

eu Ala Asp Asn Val Gln Ser Ile Ser Thr Glu Asn Thr Thr Ala Asp  
130 135 140

ly Asp Asn Ala Gly Gln  
15 150

?10> 200  
?11> 331  
?12> PRT  
?13> Homo sapiens

!00> 200

et Gly Thr Pro Gln Lys Asp Val Ile Ile Lys Ser Asp Ala Pro Asp  
5 10 15

ir Leu Leu Leu Glu Lys His Ala Asp Tyr Ile Ala Ser Tyr Gly Ser  
20 25 30

's Lys Asp Asp Tyr Glu Tyr Cys Met Ser Glu Tyr Leu Arg Met Ser  
35 40 45

## eolf-seql-S000001.txt

ly Ile Tyr Trp Gly Leu Thr Val Met Asp Leu Met Gly Gln Leu His  
50 55 60

rg Met Asn Arg Glu Glu Ile Leu Ala Phe Ile Lys Ser Cys Gln His  
5 70 75 80

lu Cys Gly Gly Ile Ser Ala Ser Ile Gly His Asp Pro His Leu Leu  
85 90 95

yr Thr Leu Ser Ala Val Gln Ile Leu Thr Leu Tyr Asp Ser Ile Asn  
100 105 110

al Ile Asp Val Asn Lys Val Val Glu Tyr Val Lys Gly Leu Gln Lys  
115 120 125

lu Asp Gly Ser Phe Ala Gly Asp Ile Trp Gly Glu Ile Asp Thr Arg  
130 135 140

ne Ser Phe Cys Ala Val Ala Thr Leu Ala Leu Leu Gly Lys Leu Asp  
145 150 155 160

la Ile Asn Val Glu Lys Ala Ile Glu Phe Val Leu Ser Cys Met Asn  
165 170 175

ne Asp Gly Gly Phe Gly Cys Arg Pro Gly Ser Glu Ser His Ala Gly  
180 185 190

In Ile Tyr Cys Cys Thr Gly Phe Leu Ala Ile Thr Ser Gln Leu His  
195 200 205

.n Val Asn Ser Asp Leu Leu Gly Trp Trp Leu Cys Glu Arg Gln Leu  
210 215 220

to Ser Gly Gly Leu Asn Gly Arg Pro Glu Lys Leu Pro Asp Val Cys  
225 230 235 240

r Ser Trp Trp Val Leu Ala Ser Leu Lys Ile Ile Gly Arg Leu His  
245 250 255

p Ile Asp Arg Glu Lys Leu Arg Asn Phe Ile Leu Ala Cys Gln Asp  
260 265 270

## eolf-seql-S000001.txt

lu Glu Thr Gly Gly Phe Ala Asp Arg Pro Gly Asp Met Val Asp Pro  
275 280 285

he His Thr Leu Phe Gly Ile Ala Gly Leu Ser Leu Leu Gly Glu Glu  
290 295 300

In Ile Lys Pro Val Asn Pro Val Phe Cys Met Pro Glu Glu Val Leu  
05 310 315 320

In Arg Val Asn Val Gln Pro Glu Leu Val Ser  
325 330

210> 201  
211> 537  
212> PRT  
213> Homo sapiens

400> 201

et Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu  
5 10 15

lu Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr  
20 25 30

sp Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro  
35 40 45

sn Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe  
50 55 60

ly Gly Val Asn Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly  
5 70 75 80

.y Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg  
85 90 95

ir Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu  
100 105 110

in Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly  
115 120 125

## eolf-seql-S000001.txt

lu Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile  
130 135 140

In Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu  
45 150 155 160

rg Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg  
165 170 175

lu Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp  
180 185 190

sp Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu  
195 200 205

sp Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu  
210 215 220

In Gln Leu Val Gln His Tyr Ser Glu Arg Ala Ala Gly Leu Cys Cys  
225 230 235 240

cg Leu Val Val Pro Cys His Lys Gly Met Pro Arg Leu Thr Asp Leu  
245 250 255

er Val Lys Thr Lys Asp Val Trp Glu Ile Pro Arg Glu Ser Leu Gln  
260 265 270

eu Ile Lys Arg Leu Gly Asn Gly Gln Phe Gly Glu Val Trp Met Gly  
275 280 285

ir Trp Asn Gly Asn Thr Lys Val Ala Ile Lys Thr Leu Lys Pro Gly  
290 295 300

ir Met Ser Pro Glu Ser Phe Leu Glu Ala Gln Ile Met Lys Lys  
305 310 315 320

eu Lys His Asp Lys Leu Val Gln Leu Tyr Ala Val Val Ser Glu Glu  
325 330 335

eo Ile Tyr Ile Val Thr Glu Tyr Met Asn Lys Gly Ser Leu Leu Asp

## eolf-seql-S000001.txt

340 345 350

he Leu Lys Asp Gly Glu Gly Arg Ala Leu Lys Leu Pro Asn Leu Val  
355 360 365

sp Met Ala Ala Gln Val Ala Ala Gly Met Ala Tyr Ile Glu Arg Met  
370 375 380

sn Tyr Ile His Arg Asp Leu Arg Ser Ala Asn Ile Leu Val Gly Asn  
385 390 395 400

ly Leu Ile Cys Lys Ile Ala Asp Phe Gly Leu Ala Arg Leu Ile Glu  
405 410 415

sp Asn Glu Tyr Thr Ala Arg Gln Gly Ala Lys Phe Pro Ile Lys Trp  
420 425 430

ir Ala Pro Glu Ala Ala Leu Tyr Gly Arg Phe Thr Ile Lys Ser Asp  
435 440 445

al Trp Ser Phe Gly Ile Leu Leu Thr Glu Leu Val Thr Lys Gly Arg  
450 455 460

al Pro Tyr Pro Gly Met Asn Asn Arg Glu Val Leu Glu Gln Val Glu  
465 470 475 480

:g Gly Tyr Arg Met Pro Cys Pro Gln Asp Cys Pro Ile Ser Leu His  
485 490 495

:u Leu Met Ile His Cys Trp Lys Lys Asp Pro Glu Glu Arg Pro Thr  
500 505 510

:e Glu Tyr Leu Gln Ser Phe Leu Glu Asp Tyr Phe Thr Ala Thr Glu  
515 520 525

:o Gln Tyr Gln Pro Gly Glu Asn Leu  
530 535

:10> 202

:11> 534

:12> PRT

:13> Homo sapiens

## eolf-seql-S000001.txt

400&gt; 202

st Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu  
5 10 15

lu Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr  
20 25 30

sp Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro  
35 40 45

sn Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe  
50 55 60

ly Gly Val Asn Ser Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly  
70 75 80

-y Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg  
85 90 95

ir Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu  
100 105 110

in Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly  
115 120 125

.u Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile  
130 135 140

.n Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu  
5 150 155 160

g Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg  
165 170 175

u Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp  
180 185 190

p Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu  
195 200 205

## eolf-seql-S000001.txt

p Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu  
210 215 220

n Gln Leu Val Gln His Tyr Ser Glu Lys Ala Asp Gly Leu Cys Phe  
5 230 235 240

n Leu Thr Val Ile Ala Ser Ser Cys Thr Pro Gln Thr Ser Gly Leu  
245 250 255

a Lys Asp Ala Trp Glu Val Ala Arg Arg Ser Leu Cys Leu Glu Lys  
260 265 270

s Leu Gly Gln Gly Cys Phe Ala Glu Val Trp Leu Gly Thr Trp Asn  
275 280 285

/ Asn Thr Lys Val Ala Ile Lys Thr Leu Lys Pro Gly Thr Met Ser  
290 295 300

> Glu Ser Phe Leu Glu Glu Ala Gln Ile Met Lys Lys Leu Lys His  
; 310 315 320

> Lys Leu Val Gln Leu Tyr Ala Val Val Ser Glu Glu Pro Ile Tyr  
325 330 335

: Val Thr Glu Tyr Met Asn Lys Gly Ser Leu Leu Asp Phe Leu Lys  
340 345 350

, Gly Glu Gly Arg Ala Leu Lys Leu Pro Asn Leu Val Asp Met Ala  
355 360 365

. Gln Val Ala Ala Gly Met Ala Tyr Ile Glu Arg Met Asn Tyr Ile  
370 375 380

Arg Asp Leu Arg Ser Ala Asn Ile Leu Val Gly Asn Gly Leu Ile  
390 395 400

Lys Ile Ala Asp Phe Gly Leu Ala Arg Leu Ile Glu Asp Asn Glu  
405 410 415

Thr Ala Arg Gln Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro  
420 425 430

## eolf-seql-S000001.txt

1 Ala Ala Leu Tyr Gly Arg Phe Thr Ile Lys Ser Asp Val Trp Ser  
435 440 445

2 Gly Ile Leu Leu Thr Glu Leu Val Thr Lys Gly Arg Val Pro Tyr  
450 455 460

3 Gly Met Asn Asn Arg Glu Val Leu Glu Gln Val Glu Arg Gly Tyr  
470 475 480

Met Pro Cys Pro Gln Asp Cys Pro Ile Ser Leu His Glu Leu Met  
485 490 495

His Cys Trp Lys Lys Asp Pro Glu Glu Arg Pro Thr Phe Glu Tyr  
500 505 510

Gln Ser Phe Leu Glu Asp Tyr Phe Thr Ala Thr Glu Pro Gln Tyr  
515 520 525

Pro Gly Glu Asn Leu  
530

)> 203  
1> 482  
2> PRT  
3> Homo sapiens

)> 203

Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu  
5 10 15

Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr  
20 25 30

Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro  
35 40 45

Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe  
50 55 60

Gly Val Asn Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly  
70 75 80

## eolf-seql-S000001.txt

' Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg  
85 90 95

: Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu  
100 105 110

: Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly  
115 120 125

: Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile  
130 135 140

: Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu  
150 155 160

: Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg  
165 170 175

: Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp  
180 185 190

Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu  
195 200 205

Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu  
210 215 220

Gln Leu Val Gln His Tyr Ser Gly Thr Trp Asn Gly Asn Thr Lys  
230 235 240

Ala Ile Lys Thr Leu Lys Pro Gly Thr Met Ser Pro Glu Ser Phe  
245 250 255

Glu Glu Ala Gln Ile Met Lys Lys Leu Lys His Asp Lys Leu Val  
260 265 270

Leu Tyr Ala Val Val Ser Glu Glu Pro Ile Tyr Ile Val Thr Glu  
275 280 285

Met Asn Lys Gly Ser Leu Leu Asp Phe Leu Lys Asp Gly Glu Gly  
290 295 300

## eolf-seql-S000001.txt

; Ala Leu Lys Leu Pro Asn Leu Val Asp Met Ala Ala Gln Val Ala  
; 310 315 320

; Gly Met Ala Tyr Ile Glu Arg Met Asn Tyr Ile His Arg Asp Leu  
; 325 330 335

; Ser Ala Asn Ile Leu Val Gly Asn Gly Leu Ile Cys Lys Ile Ala  
; 340 345 350

; Phe Gly Leu Ala Arg Leu Ile Glu Asp Asn Glu Tyr Thr Ala Arg  
; 355 360 365

Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ala Ala Leu  
370 375 380

Gly Arg Phe Thr Ile Lys Ser Asp Val Trp Ser Phe Gly Ile Leu  
390 395 400

Thr Glu Leu Val Thr Lys Gly Arg Val Pro Tyr Pro Gly Met Asn  
405 410 415

Arg Glu Val Leu Glu Gln Val Glu Arg Gly Tyr Arg Met Pro Cys  
420 425 430

Gln Asp Cys Pro Ile Ser Leu His Glu Leu Met Ile His Cys Trp  
435 440 445

Lys Asp Pro Glu Glu Arg Pro Thr Phe Glu Tyr Leu Gln Ser Phe  
450 455 460

Glu Asp Tyr Phe Thr Ala Thr Glu Pro Gln Tyr Gln Pro Gly Glu  
470 475 480

Leu

0> 204  
1> 674  
2> PRT  
3> Homo sapiens

## eolf-seql-S000001.txt

)0&gt; 204

: Ala Pro Gly Gln Ala Pro His Gln Ala Thr Pro Trp Arg Asp Ala  
5 10 15

> Pro Phe Phe Leu Leu Ser Pro Val Met Gly Leu Leu Ser Arg Ala  
20 25 30

> Ser Arg Leu Arg Gly Leu Gly Pro Leu Glu Pro Trp Leu Val Glu  
35 40 45

> Val Lys Gly Ala Ala Leu Val Glu Ala Gly Leu Glu Gly Glu Ala  
50 55 60

> Thr Pro Leu Ala Ile Pro His Thr Pro Trp Gly Arg Arg Pro Gly  
70 75 80

> Glu Ala Glu Asp Ser Gly Gly Pro Gly Glu Asp Arg Glu Thr Leu  
85 90 95

> Leu Lys Thr Ser Ser Leu Pro Glu Ala Trp Gly Leu Leu Asp  
100 105 110

> Asp Asp Gly Met Tyr Gly Glu Arg Glu Ala Thr Ser Val Pro Arg  
115 120 125

> Gln Gly Ser Gln Phe Ala Asp Gly Gln Arg Ala Pro Leu Ser Pro  
130 135 140

Leu Leu Ile Arg Thr Leu Gln Gly Ser Asp Lys Asn Pro Gly Glu  
150 155 160

Lys Ala Glu Glu Glu Gly Val Ala Glu Glu Glu Gly Val Asn Lys  
165 170 175

Ser Tyr Pro Pro Ser His Arg Glu Cys Cys Pro Ala Val Glu Glu  
180 185 190

Asp Asp Glu Glu Ala Val Lys Lys Glu Ala His Arg Thr Ser Thr  
195 200 205

Ala Leu Ser Pro Gly Ser Lys Pro Ser Thr Trp Val Ser Cys Pro

210 eolf-seql-s000001.txt  
215 220

ly Glu Glu Glu Asn Gln Ala Thr Glu Asp Lys Arg Thr Glu Arg Ser  
25 230 235 240  
245 250 255  
ro Arg Ser Trp Glu Tyr Arg Ser Gly Glu Ala Ser Glu Glu Lys Glu  
260 265 270  
lu Lys Ala His Glu Glu Thr Gly Lys Gly Glu Ala Ala Pro Gly Pro  
275 280 285  
.n Ser Ser Ala Pro Ala Gln Arg Pro Gln Leu Lys Ser Trp Trp Cys  
290 295 300  
.n Pro Ser Asp Glu Glu Glu Ser Glu Val Lys Pro Leu Gly Ala Ala  
5 310 315 320  
u Lys Asp Gly Glu Ala Glu Cys Pro Pro Cys Ile Pro Pro Pro Ser  
325 330 335  
a Phe Leu Lys Ala Trp Val Tyr Trp Pro Gly Glu Asp Thr Glu Glu  
340 345 350  
.l Glu Asp Glu Glu Glu Asp Glu Asp Ser Asp Ser Gly Ser Asp Glu  
355 360 365  
.l Glu Gly Glu Ala Glu Ala Ser Ser Ser Thr Pro Ala Thr Gly Val  
370 375 380  
.l Leu Lys Ser Trp Val Tyr Gln Pro Gly Glu Asp Thr Glu Glu Glu  
390 395 400  
.l Asp Glu Asp Ser Asp Thr Gly Ser Ala Glu Asp Glu Arg Glu Ala  
405 410 415  
Thr Ser Ala Ser Thr Pro Pro Ala Ser Ala Phe Leu Lys Ala Trp  
420 425 430

## eolf-seql-S000001.txt

. Tyr Arg Pro Gly Glu Asp Thr Glu Glu Glu Glu Asp Glu Asp Val  
435 440 445

> Ser Glu Asp Lys Glu Asp Asp Ser Glu Ala Ala Leu Gly Glu Ala  
450 455 460

: Ser Asp Pro His Pro Ser His Pro Asp Gln Ser Ala His Phe Arg  
; 470 475 480

' Trp Gly Tyr Arg Pro Gly Lys Glu Thr Glu Glu Glu Ala Ala  
485 490 495

: Asp Trp Gly Glu Ala Glu Pro Cys Pro Phe Arg Val Ala Ile Tyr  
500 505 510

. Pro Gly Glu Lys Pro Pro Pro Pro Trp Ala Pro Pro Arg Leu Pro  
515 520 525

. Arg Leu Gln Arg Arg Leu Lys Arg Pro Glu Thr Pro Thr His Asp  
530 535 540

. Asp Pro Glu Thr Pro Leu Lys Ala Arg Lys Val Arg Phe Ser Glu  
550 555 560

Val Thr Val His Phe Leu Ala Val Trp Ala Gly Pro Ala Gln Ala  
565 570 575

Arg Gln Gly Pro Trp Glu Gln Leu Ala Arg Asp Arg Ser Arg Phe  
580 585 590

Arg Arg Ile Ala Gln Ala Gln Glu Glu Leu Ser Pro Cys Leu Thr  
595 600 605

Ala Ala Arg Ala Arg Ala Trp Ala Arg Leu Arg Asn Pro Pro Leu  
610 615 620

Pro Ile Pro Ala Leu Thr Gln Thr Leu Pro Ser Ser Ser Val Pro  
630 635 640

Ser Pro Val Gln Thr Thr Pro Leu Ser Gln Ala Val Ala Thr Pro  
645 650 655

## eolf-seql-S000001.txt

: Arg Ser Ser Ala Ala Ala Ala Ala Leu Asp Leu Ser Gly Arg  
660 665 670

| Gly

.0> 205  
.1> 635  
2> PRT  
3> Homo sapiens

0> 205

Ser Val Gly Val Ser Thr Ser Ala Pro Leu Ser Pro Thr Ser Gly  
5 10 15

Ser Val Gly Met Ser Thr Phe Ser Ile Met Asp Tyr Val Val Phe  
20 25 30

Leu Leu Leu Val Leu Ser Leu Ala Ile Gly Leu Tyr His Ala Cys  
35 40 45

Gly Trp Gly Arg His Thr Val Gly Glu Leu Leu Met Ala Asp Arg  
50 55 60

Met Gly Cys Leu Pro Val Ala Leu Ser Leu Leu Ala Thr Phe Gln  
70 75 80

Ala Val Ala Ile Leu Gly Val Pro Ser Glu Ile Tyr Arg Phe Gly  
85 90 95

Gln Tyr Trp Phe Leu Gly Cys Cys Tyr Phe Leu Gly Leu Leu Ile  
100 105 110

Ala His Ile Phe Ile Pro Val Phe Tyr Arg Leu His Leu Thr Ser  
115 120 125

Tyr Glu Tyr Leu Glu Leu Arg Phe Asn Lys Thr Val Arg Val Cys  
130 135 140

Thr Val Thr Phe Ile Phe Gln Met Val Ile Tyr Met Gly Val Val  
150 155 160

## eolf-seql-S000001.txt

1 Tyr Ala Pro Ser Leu Ala Leu Asn Ala Val Thr Gly Phe Asp Leu  
165 170 175

2 Leu Ser Val Leu Ala Leu Gly Ile Val Cys Thr Val Tyr Thr Ala  
180 185 190

3 Gly Gly Leu Lys Ala Val Ile Trp Thr Asp Val Phe Gln Thr Leu  
195 200 205

4 Met Phe Leu Gly Gln Leu Ala Val Ile Ile Val Gly Ser Ala Lys  
210 215 220

5 Gly Gly Leu Gly Arg Val Trp Ala Val Ala Ser Gln His Gly Arg  
230 235 240

6 Ser Gly Phe Glu Leu Asp Pro Asp Pro Phe Val Arg.His Thr Phe  
245 250 255

7 Thr Leu Ala Phe Gly Gly Val Phe Met Met Leu Ser Leu Tyr Gly  
260 265 270

8 Asn Gln Ala Gln Val Gln Arg Tyr Leu Ser Ser Arg Thr Glu Lys  
275 280 285

9 Ala Val Leu Ser Cys Tyr Ala Val Phe Pro Phe Gln Gln Val Ser  
290 295 300

10 Cys Val Gly Cys Leu Ile Gly Leu Val Met Phe Ala Tyr Tyr Gln  
310 315 320

11 Tyr Pro Met Ser Ile Gln Gln Ala Gln Ala Ala Pro Asp Gln Phe  
325 330 335

12 Leu Tyr Phe Val Met Asp Leu Leu Lys Gly Leu Pro Gly Leu Pro  
340 345 350

13 Leu Phe Ile Ala Cys Leu Phe Ser Gly Ser Leu Ser Thr Ile Ser  
355 360 365

14 Ala Phe Asn Ser Leu Ala Thr Val Thr Met Glu Asp Leu Ile Arg  
370 375 380

## eolf-seql-S000001.txt

ro Trp Phe Pro Glu Phe Ser Glu Ala Arg Ala Ile Met Leu Ser Arg  
35 390 395 400

ly Leu Ala Phe Gly Tyr Gly Leu Leu Cys Leu Gly Met Ala Tyr Ile  
405 410 415

er Ser Gln Met Gly Pro Val Leu Gln Ala Ala Ile Ser Ile Phe Gly  
420 425 430

et Val Gly Gly Pro Leu Leu Gly Leu Phe Cys Leu Gly Met Phe Phe  
435 440 445

o Cys Ala Asn Pro Pro Gly Ala Val Val Gly Leu Leu Ala Gly Leu  
450 455 460

il Met Ala Phe Trp Ile Gly Ile Gly Ser Ile Val Thr Ser Met Gly  
475 475 480

ie Ser Met Pro Pro Ser Pro Asn Gly Ser Ser Phe Ser Leu Pro  
485 490 495

ir Asn Leu Thr Val Ala Thr Val Thr Thr Leu Met Pro Leu Thr Thr  
500 505 510

ie Ser Lys Pro Thr Gly Leu Gln Arg Phe Tyr Ser Leu Ser Tyr Leu  
515 520 525

p Tyr Ser Ala His Asn Ser Thr Thr Val Ile Val Val Gly Leu Ile  
530 535 540

l Ser Leu Leu Thr Gly Arg Met Arg Gly Arg Ser Leu Asn Pro Ala  
550 555 560

r Ile Tyr Pro Val Leu Pro Lys Leu Leu Ser Leu Leu Pro Leu Ser  
565 570 575

s Gln Lys Arg Leu His Cys Arg Ser Tyr Gly Gln Asp His Leu Asp  
580 585 590

r Gly Leu Phe Pro Glu Lys Pro Arg Asn Gly Val Leu Gly Asp Ser

eolf-seql-S000001.txt  
595                   600                   605

rg Asp Lys Glu Ala Met Ala Leu Asp Gly Thr Ala Tyr Gln Gly Ser  
610                   615                   620

er Ser Thr Cys Ile Leu Gln Glu Thr Ser Leu  
25                   630                   635

eolf-seql-S000001.txt  
!160

.0> 36  
.1> 666  
.2> DNA  
.3> Homo sapiens

)0> 36  
!ggcttgg ctgcgcctc tcgcgccgca cgctctgcgg gttccctccct tcttccgagc  
60

:tcctctg gccgcgcgc gggagagagg ccgagatggc agatgagatt gccaggc  
120

!tcgctcg gcctggtggc gacacgatct ttggaaagat catccgcaag gaaataaccag  
180

!aaatcat ttttggaggat gaccggtgcc ttgctttcca tgacatttcc cctcaagcac  
240

!cacattt tctggtgata cccaaagaaac atatatccca gatttctgtg .gcagaagatg  
300

!atgaaag tcttcttggc cacttaatga ttgttggcaa gaaatgtgct gctgatctgg  
360

:tgaataa gggttatcga atgggttgta atgaagggttc agatggtgga cagtctgtct  
420

:acgttca tctccatgtt cttggaggc ggcaaatgca ttggcctccct ggttaagcac  
480

ttgggga taatttctc ttcttaggc aatgattaag ttaggcaatt tccagttatgt  
540

gtaaacac acttattttt gcctgtgtat ggagagattc aagaaataat ttaaaaccg  
600

acataat aaaagacatt gttgcattggc ttgtaaaaaaaaaaaaaaaaaaaaaaaaaaaa  
660

aaa  
666

0> 37  
1> 3683  
2> DNA  
3> Homo sapiens

0> 37  
ggcagggc ggcggctgca gggcaggtcc agggggccaca tggctgaggg ggacgcaggg  
60

eolf-seql-S000001.txt

.200  
:ttatttg ggagaactaa tttgaactta atcaccactt catctaattt tagcaaggta  
.260  
:gttgccc agggcagtac ctgaattaac tgtccatttc agtacatgtc aagtgcctt  
.320  
:aggtgga gaagaaatgt ctctagagga atataaatac ctgatttctt gtcatcgaga  
.380  
:ttgtact gttaaatgaa tattgcctt tactgctctt tatggcttat tggaaatagga  
.440  
.cattaa gattgatctt ggagagttc ttcttgat ttagttcat aagtatgtca  
.500  
.ttcattt tatagtgttc atcattgagt aatggattaa gtgaaaatcc aggagtatcc  
.560  
:tgcagtt atgtgctgag gtgataattc atccaacata tttgttagca taaatattat  
.620  
:tcagtt ctgttgcaaa ttggtgattg tgaaattaca gaaagtgatt ttctagtctg  
.680  
:ttttgt ttaattcttg taatgttaagc aataaatatg gagtgtcagt agtctccttc  
740  
:cccagaa atgtgttgtt gtaacattct cgtttcttt aacaacctgg aagtacctt  
800  
gtgatct tcactgagga attagaacta tgatagaagt taggctgtgg caaatggac  
860  
cgtagag tggatagag gtggcagaat gaaacctgg tagggcagga gtatgttgtg  
920  
ttacatc aatttgatgc atgcttcca tctgcactcc agacggctt ctcagttcca  
980  
tttgca gagagaagga gcaaacctt tcattggaaa aacagaaaca accctcccc  
040  
tttttc ccctctattc atcaaacctt tatgtatctt tcatttcca gttacctcta  
100  
attnaga tagtcaaatt taccttgag atataacaat aagtgattaa ctgttcactt  
160  
gatgtaa tggcaaacaa ttgttaaaag ttatataactg atcacagatt tgccctggact  
220  
cttccca gggagggAAC agaagttagg aggcaacttt gggatggtgc tagagcatgg  
280

eolf-seql-S000001.txt

jcgaccaga ggcagaatga ggaattgaa gcaatggcag ccatttatgg cgaggagtgg  
120

jtgtcattg atgactgtgc caaaatattt tgtatttagaa ttagcgacga tatagatgac  
180

:caaatgga cacttgctt gcaggtgatg ctgccaatg aataccagg tacagctcca  
240

:tatctacc agttgaatgc tccttggctt aaaggcaag aacgtgcgga ttatcaaat  
300

:ccttgagg aaatatataat tcagaatatc ggtgaaagta ttcttacct gtgggtggag  
360

.aataagag atgttcttat acaaaaatct cagatgacag aaccaggccc agatgtaaag  
420

.gaaaactg aagaggaaga tggtaatgt gaagatgatc tcattttagc atgtcagccg  
480

aagttcgg ttaaaggcatt ggattttgat atcagtgaaa. ctcggacaga agtagaagta  
540

agaattac ctccgattga tcatggcatt cctattacag accgaagaag tactttcag  
600

acacttgg ctccagtggt ttgtccaaa caggtaaaaa tggttcttc caaattgtat  
660

gaataaga aaatagctag tgccacccac aacatctatg cctacagaat atattgtgag  
720

ttaacaga ctttcttaca ggattgtgag gatgatgggg aaacagcagc tggggcgt  
780

:cttcatc tcatggagat tttgaatgtg aagaatgtca tggtggtagt atcacgctgg  
840

:ggaggga ttctgctagg accagatcgc tttaaacata tcaacaactg tgccagaaac  
900

:cttagtgg aaaagaacta cacaattca cctgaggagt catctaaggc tttggaaag  
960

:aaaaaaaaaa taagaaaaga caagaagagg aatgaacatt aatacctgaa actataggaa  
.020

:tttaattt gcctataatt atatatacat tccatagtca tcaaggaata tattgtcag  
.080

.gagtagtcc ttgactgct taagtcagcc agttcagcat ggataccaac attagcttt  
140

cttggtt atatcatctg ccaaaaatag agaacttatg atctattcat gtgtgtttca

## eolf-seql-S000001.txt

agcacaga gaattggaca aacaggcttt tttctctttt ctctgatgtt ttaccttaa  
340  
atccaac atccttaccg ttggtatttt tagtaaggaa atagtaaata gctttacacc  
400  
atggatt ctgaaatata aattctaaat tatattgtt ataactataat tttatgttgt  
460  
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520  
tatgctt tgtgttttaa ctgttaaaat aatttaaaaaa ttaatttattt tacataatta  
580  
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640  
gagatag gaaacaatga gaaacttact tttgctcctt tatacagaat tattaactat  
700  
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760  
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820  
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880  
attttc agttctccat ataataattt tctacaatca gatctatgtc gtggcatatt  
940  
ctttatt taaaaattttt ttttagaga tgagtttttgc ctctgtcacc taggctggag  
000  
agtggca tgatcatggc tcactgcagc cttgacccttc cagcctgcc a gtagctggg  
060  
acagaca ggcatgtgct attacacctg gctaattttt aaagttttt ttgtaaagat  
120  
gtcttc tatgttgccc aggctcgct tgagctcctg gcctcaatcg atcttcctgc  
180  
gttttg gaattacagg tgtgagccac catgcctggc ctgctttgac atattttata  
240  
tgttaat tacaatagt cttcatatgc cagaatataa gagcaagtgt tatctacttt  
300  
gatggga attgcagaag ctgcataaaa agtatgctt gaggtatata tagtcaaaca  
360

eolf-seql-S000001.txt  
gccttct gaagagaatt atatcaaact aattacaacc aagaaataat agtatgaagc  
3420  
atgctgtt tggaggacag gaaaatttat cggaaaattt acataatccc tctgattcca  
3480  
atccagag atagccatta ttattaatat ttggtatgta catccttata ttatTTTT  
3540  
tatgcatt attttgtata tatggttatt tttctttcca taaaaatggt attaaactgt  
3600  
atactgtt ttgttagccta catattcat atagaagtat attgttaaca ttttccatgt  
3660  
ataaaatat tctatggcct tct  
3683

10> 38  
11> 3251  
12> DNA  
13> Homo sapiens

00> 38  
gcaactat gaaataatcg tagtatgaga ggcagagatc gggcgagac aatggggatg  
60  
ggcgccgg agccccgttc cggcttagca gcacctccc gccccgcaga ataaaaccga  
120  
gcgcCCCC tccgcgcgcg ccctcccccg agtgcggagc gggaggaggc ggcggcggcc  
180  
ggaggagg aggaggaggc cccggaggag gaggcggtgg aggtcgaggc ggaggcggag  
240  
ggaggagg ccgaggcgcc ggaggaggcc gagggcgcgg agcaggagga ggcggccgg  
300  
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360  
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480  
ccgggatt ttttatcaag cagaaatgca tcgaacaacg agaatcaaga tcactgagct  
540  
atccccac ctgatgtgt tgcttgcgg agggtaatcc attgatgcca caaccataat  
600

eolf-seql-S000001.txt  
aatgtcta cattccttct gtaaaaacgtg tattgttcgt tacctggaga ccagcaagta  
660  
gtccttatt tgtgatgtcc aagttcacaa gaccagacca ctactgaata taaggtcaga  
720  
aaactctc caagatattg tatacaaatt agttccaggg cttttcaaaa atgaaatgaa  
780  
gaagaagg gatTTTATG cagctcatcc ttctgctgat gctgc当地 gctctaattga  
840  
atagagga gaggttgcag atgaagataa gagaattata actgatgatg agataataag  
900  
tatccatt gaattcttg accagaacag attggatcg aaagtaaaca aagacaaga  
960  
aatctaag gaggaggtga atgataaaag atacttacga tgcccagcag caatgactgt  
1020  
:gcactta agaaagtTC tcagaagtaa aatggacata .cctaatactt tccagattga  
1080  
:catgtat gaggaggaac cttaaagga ttattataca ctaatggata ttgcctacat  
1140  
:atacctgg agaaggaatg gtccacttcc attgaaatac agagttcgac ctacttgtaa  
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:tagcccc agtactccag tgcagtctcc tcattcacag tttcctcaca tttccagttac  
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1440  
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1500  
rgaaaaaaaaa attttaaacc cctgatttat atagatatct tcattgcatt acagtttct  
1560  
:tgctaat acatgtgact atcgtccaaat ttgcttctt ttgttagtgac attaaatttg  
1620  
.ataaaaag atggactaca tgtgataactc ctatggacgt taattgaaaa gaaagattgt  
1680  
.tataaaag aattggtttc ttggaaagca ggcaagactt tttctctgtg ttaggaaaga

## eolf-seql-s000001.txt

1740

ggaaatgg tttctgtaac cattgttgg atttggaaatc actctgcagt ggacataagc  
1800

tggccat agtttgttaa tctcaactaa cgccctacatt acattctcct tgatcggt  
1860

ttattacg ctgtttgtg aacctgtaga aaacaagtgc ttatgttctt gaaattcaac  
1920

acggaaag aatatgcata gaataatgca ttctatgttag ccatgtcaact gtgaataacg  
1980

ttcttgca tathtagcca ttgttattcc tggttgcattt atacttcctt gttgctacgc  
2040

aaccgatc aaagaaaaatc gaacttcagg tttacaatct gtatgcctaa aagcgggtac  
2100

ccgttat ttactgact tgttaaatg attcgctttt gtaagaatca gatggcatta  
2160

cttgcgtt acaatgccat attggatat gacataacag gaaacagttt tgtatgat  
2220

:stataaat gctataaaga aatattgtgt ttcatgcatt cagaaatgtat tgtaaaaatt  
2280

cccaactg gttcgacctt tgcaagatacc cataacctat gttgagcctt gcttaccagc  
2340

agaatatt ttatgtgg atatctaatt ctaaagtctg ttccattttaga agcaattggc  
2400

atctttctt atactttata tactttctc cagtaataca tgtttacattt aaaaattgtt  
2460

tgtgaaga aaaacctta actgagaaat atggaaaccg tcttaatttt ccattggcta  
2520

atggaaatt aatattgtat tttaaaaatg catattgatc actataattc taaaacaatt  
2580

:taaataaa accagcagggt tgctaaaaga aggcatatc tctaaagtta tttaatagg  
2640

:tatacgca gtaattttaa atttaagagt tgctttaca gttaacaatg gaatatgcct  
2700

:ctgctat gtctgaaaat agaagctatt tattatgagc ttctacaggt atttttaat  
2760

:igcaagca tggtaattt aaaatatgaa taacccacc caacaatttt cagtttattt  
2820

## eolf-seql-S000001.txt

:gctttgg tcgaacttgg tgtgtgttca tcacccatca gttatttgg agggtgttta  
:880  
:tataatga atattgtttc atgtttgtat gggaaaattg tagctaaaca tttcattgtc  
:940  
:agtctgc aaaagaagca caattctatt gctttgtctt gcttatagtc attaaatcat  
:1000  
:ttttaca tatattgctg ttacttctgc tttctttaaa aatatagtaa aggatgttt  
:1060  
:aagtcac aagatacata tatttttatt ttgacctaaa tttgtacagt cccattgtaa  
:120  
:ttgtttc taattataga tgtaaaatga aatttcattt gtaattggaa aaaatccaat  
:180  
.aaggata ttcatttaga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa  
:240  
aaaaaaa a  
251

0> 39  
1> 2855  
2> DNA  
3> Homo sapiens

0> 39  
tggcagt tatatagacc ggcggcggag cacgcgtgtg tgccggacgca gttgcgtgag  
60  
tttgtac tatttcgggt gctgtggtgc agagctagtt cctctccagc tcagcccggt  
120  
tttggac atatttgact cttttcccc caggttgaat tgaccaaagc aatggtgatg  
180  
aagccta gtccctgct ggtcgccgg gaatttgtga gacagtattt cacactgctg  
240  
caggccc cagacatgct gcatagattt tatggaaaga actcttctta tgtccatggg  
300  
ttggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg  
360  
gtgatgt cacaactt caccaactgc cacaccaaga ttccatgt tgatgctcat  
420  
acgctaa atgatgggtgt ggttagtccag gtgatggggc ttctctctaa caacaaccag  
480

eolf-seql-S000001.txt

ttaggaga gattcatgca aacgtttgtc cttgctcctg aggggtctgt tgcaaataaa  
540

atgttc acaatgatat ctgcagatac caagatgagg tctttggtgg gtttgtcact  
600

ccctcagg aggagtctga agaagaagta gaggaacctg aagaaaagaca gcaaacacct  
660

gtggtagc ctgatgattc tggaactttc tatgatcagg cagttgtcag taatgacatg  
720

gaacatt tagaggagcc tgttgctgaa ccagagcctg atcctgaacc agaaccagaa  
780

gaacctg tatctgaaat ccaagaggaa aagcctgagc cagtattaga agaaactgcc  
840

gaggatg ctcagaagag ttcttctcca gcacctgcag acatagctca gacagtacag  
900

gacttga ggacattttc ttgggcatct gtgaccagta agaatcttcc acccagtgg  
960

ttccag ttactggat accacctcat gttgttaaag taccagcttc acagccccgt  
020

gagtcta agcctgaatc tcagattcca ccacaaagac ctcagcggga tcaaagagt  
080

gaacaac gaataaatat tcctcccaa aggggaccca gaccaatccg tgaggctggt  
140

caaggtg acattgaacc ccgaagaatg gtgagacacc ctgacagtca ccaactcttc  
200

ggcaacc tgcctcatga agtggacaaa tcagagctt aagatttctt tcaaagttat  
260

aacgtgg tggagttgcg cattaacagt ggtggaaat tacccattt tggtttgtt  
320

tttgatg attctgagcc tggtcagaaa gtccttagca acaggccat catgttcaga  
380

gaggtcc gtctgaatgt cgaagagaag aagactcgag ctgccagggg aggccgaccga  
440

gataatc gccttcgggg acctggaggc cctcgaggtg ggctgggtgg tggaatgaga  
500

cctccccc gtggaggcat ggtgcagaaa ccaggattt gagtggaaag ggggcttgcg  
560

eolf-seql-S000001.txt  
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1620  
  
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1680  
  
aagtttgt ataattttac ttttttgtg tgttaatgggt gtgtgctccc tctccctctc  
1740  
  
ccctttcc tgaccttag tcttcactt ccaattttgt ggaatgatat tttaggaata  
1800  
  
ggactttt aaagaagcaa aaaaaaagac tgaatttcct tgcttacttt gcatatacag  
1860  
  
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1920  
  
atttgta tgtttcattc attggaatat ttcttatttt ctacgtgtt gaaaaggctg  
1980  
  
agaaatac aggatttgat aatattttga aggcaggaaa aacccaaatt gtttcttctt  
2040  
  
agagtcat gactacccatc tgggtgtggag aaattgccat tggaaaattt gacaattttg  
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2160  
  
acaaaaca attctaaaac ctaactgtt ttaccattga aatttaaattt gtgataatag  
2220  
  
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2280  
  
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2340  
  
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2400  
  
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2520  
  
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2580  
  
cccttaaat agttcagcat ttgtatTTTt attctggat ctaatcagat tcctaatcat  
2640  
  
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eolf-seql-S000001.txt  
2700  
ttttttt cttaaaaatca tagccatatg gtaaaatttc tattttgtta tgttctctt  
2760  
attgatgg gcatgcagtg ggtgttactt ggaaatggcc aatttttatt aaaatattc  
2820  
gaagaaaa tttaaaaaaaaaaaaaaaa aaaaa  
2855  
  
10> 40  
11> 1396  
12> DNA  
13> Homo sapiens  
  
00> 40  
gtaattaa aaggcggcgg aagaaggtgg gagggtcatg acgcagcgag tttcagtcgt  
60  
  
cttttctg ggggcatcgc ggcgtccctt ttttttgcc tttaaagtaa aacgtcgccc  
120  
  
acgcaccc cccgcgtatt tcggggggcg gaggcggcgg gccacggcgc gaagagggc  
180  
  
tgctgacg ccggccggtc acgtggcgt gttgtgggg ggaggggcgc cgccgcgcgg  
240  
  
gttccgg gcgggtggga gcgcgcgagc tagcgagcga gaggcagccg cgcccgccgc  
300  
  
ccccctgct ctgtatgccg ctctctcccg gcgcggccgc cgccgatcac agcagcagga  
360  
  
caccgcgg ccgcgggttga tgtgggtggg ccggggctga ggaggccgcc aagatgccgc  
420  
  
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480  
  
atccaatt ttttgaaggc caatttgtgg actcctacga tccaaccata gaaaacactt  
540  
  
acaaagtt gatcacagta aatggacaag aatatcatct tcaacttgta gacacagccg  
600  
  
caagatga atattctatc tttcctcaga catactccat agatattaat ggctatattc  
660  
  
gtgtattc ttttacatca atcaaaagtt ttgaagtgtat taaagttatc catggcaaat  
720  
ttggatat ggtggggaaa gtacaaatac ctattatgtt ggttggaaat aagaaagacc

```
#          ##  
####  ##  ####  ######  #  #  ######  ##  ##  ######  ##  ##  
#  ##  #  #  #  #  ##  ##  #  #  #  #  #  #  #  #  #  #  #  
#  #  #####  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  
#  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  
#  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  #  
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#          #  
####  ####
```

Job : 14  
Date: 4/11/2007  
Time: 11:27:02 AM